Vol. 920 Number 3

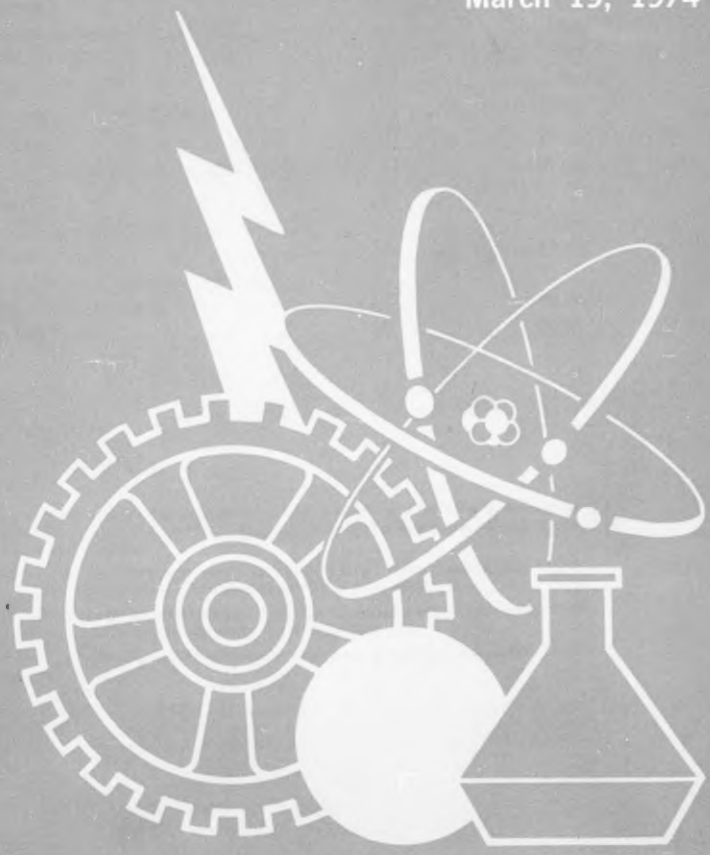
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

March 19, 1974



U. S. DEPARTMENT OF COMMERCE
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

March 19, 1974 Volume 920 Number 3

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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,704,346, E. J. Schaefer, MOTOR CONTROL FOR SUBMERSIBLE SUMP PUMP, **filed** Apr. 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c849, *Franklin Electric Co.* v. *Universal Electric Supply Co. and Universal Electric Co.* By stipulation, case dismissed, Dec. 29, 1972.

2,796,098, R. C. Dreier, HAND-SAW CONSTRUCTION, **filed** Aug. 24, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2109, *Raymond C. Dreier & Dreier Brothers, Inc.* v. *Mathias Klein and Sons, Inc.* Case dismissed, judgment entered on pleadings, June 15, 1973.

2,910,365, M. Olliver, PECTIN PREPARATION AND METHOD OF MAKING A TABLE JELLY, **filed** Oct. 12, 1973, D.C. Maine (Portland), Doc. 14–95, *General Foods Corporation* v. *Libby, McNeill & Libby.*

2,956,114, Ginsburg, Henderson, Dolby and Anderson, BROAD BAND MAGNETIC TAPE SYSTEM AND METHOD, **filed** Aug. 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1929, *Ampex Corp.* v. *Avco Corp. et al.* Complaint dismissed by stipulation, without prejudice, Mar. 8, 1973. **Same, filed** Sept. 11, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2345, *Ampex Corporation* v. *Bell & Howell Company et al.*

2,978,291, V. T. Fabringer, PROCESS AND APPARATUS FOR TREATING TEXTILE MATERIALS WITH A LIQUID, **filed** Nov. 21, 1973, D.C., M.D. Pa. (Scranton), Doc. 73–662, *Burlington Industries Inc.* v. *United Piece Dye Works.*

2,996,363, R. F. Ruyak, AUTOCLAVE, **filed** Nov. 21, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73–2640, *Autoclave Engineers, Inc.* v. *The Duriron Company, Inc.*

3,024,301, K. R. Walch, WIRING GRILLE, **filed** May 22, 1973, U.S. Court of Appeals, Ohio (Cincinnati), Doc. 72–1479 and 72–2032, *Panduit Corporation* v. *Stahlin Bros. Fibre Works, Inc.* Decision, claims of defendant are without merit, judgment of the District Court is affirmed May 22, 1973.

3,091,360, B. Edwards, NESTABLE CUP; **3,139,213,** same, **filed** Mar. 6, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c480, *Illinois Tool Works Inc.* v. *Solo Cup Company, Inc.* Enter findings of fact and conclusions of law, June 29, 1973.

3,103,736, C. E. Ortman, Jr., CUTTING TOOL AND MILLING HEAD INSERT THEREFOR, **filed** Aug. 26, 1965, D.C., N.D. Ill. (Chicago), Doc. 65c1430, *Charles E. Ortman, Jr.* v. *Standard Railway Equipment Manufacturing Company, Division of Stanray Corporation.* Case dismissed, Jan. 7, 1972.

3,107,991, F. Taussig, SCREEN, **filed** Dec. 11, 1973, D.C., W.D. Ky. (Louisville), Doc. 7910–B, *Arundale Manufacturers, Inc.* v. *General Electric Company.*

3,139,213. (See 3,091,360.)

3,163,299, J. C. Settles, IMPACT ENERGY ABSORBING MECHANISM FOR RAILWAY VEHICLES, **filed** Nov. 28, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3009, *Buckeye Steel Castings Co.* v. *Evans Products Company et al.*

3,184,872, F. L. Way, MOVING PATTERN SIMULATOR, **filed** Nov. 21, 1973, D.C. Conn. (Bridgeport), Doc. B–930, *Mechtronics Corporation and Display Art, Inc.* v. *UMC Electroptics, Inc.*

3,236,390, H. F. J. Sprengel, SHIP'S CARGO BOOM WITH PENDULUM PURCHASE BLOCK FITTING, **filed** Oct. 9, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–2274, *Blohm & Voss AG and Macgregor-Comarain, Inc.* v. *Sun Shipbuilding & Dry Dock Co.*

3,250,205, R. R. Lambert, STRIP-TYPE AIR DIFFUSER; **3,406,623,** same, PLENUM AIR DIFFUSER ASSEMBLY, **filed** Mar. 23, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73–C–169, *Air Factors, Inc.* v. *Tempmaster Corp. and Edward Filkins, Inc.* Decision and order granting defendant's motion to dismiss, judgment entered, Nov. 14, 1973.

3,250,662, N. R. Seaman, COATED FABRIC, **filed** Aug. 25, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–830, *Shelter-Lite Inc.* v. *Reeves Brothers, Inc.* Case dismissed with prejudice as being moot, filed Nov. 30, 1973.

3,268,798, L. J. G. Burski, ADJUSTABLE VOLTAGE CONTROL CIRCUIT, **filed** May 5, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1060, *Superior Electric Co.* v. *Major Corp.* Enter consent judgment, Oct. 20, 1972.

3,297,153, L. A. Fattori, SHOCK RESISTANT PLASTIC CONTAINERS WITH SELF-CONTAINED LOCKING MEANS, **filed** July 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1600, *Plastic Reel Corporation of America* v. *Film Editing Equipment Corp., also known as Hollowood Film Company.* Cause removed from active calendar June 28, 1972, consent judgment entered, Aug. 14, 1972.

3,306,864, Lang, Grazen and Less, PHENOL FORMALDEHYDE-UREA RESIN COMPONENT BINDER, **filed** Aug. 31, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2120, *Hooker Chemical Corporation* v. *International Minerals & Chemical Corp.* by stipulation, case dismissed, Aug. 3, 1972.

3,349,285, N. L. Belkin, SURGICAL GOWN WITH STATIC ELECTRICITY DISCHARGE MEANS, **filed** Oct. 13, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2579, *Angelica Corp.* v. *Opelika Manufacturing Corp.* Enter order dismissing complaint by stipulation, May 10, 1973.

3,351,368, R. K. Sweet, MAGNETIC CATCH, **filed** May 11, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1109, *Richard K. Sweet* v. *Marvel Metal Products and International Components Corp.* Judgment entered for the defendants, June 30, 1971.

3,406,623. (See 3,250,205.)

3,452,368, J. R. Couper, PORTABLE WASTE DISPOSER; **3,536,192,** same, CONTAINER FOR INCREMENTAL WITHDRAW OF TUBULAR PLASTIC, **filed** Nov. 2, 1973, D.C. Colo. (Denver), Doc. C–5502, *John R. Couper* v. *Sanimatic Corporation.*

3,507,495, Tucker, Fracalossi, Crawford and Sollers, LACROSSE STICK, **filed** Dec. 3, 1973, D.C. Md. (Baltimore), Doc. 73–1173–B. *Wm. T. Burnett & Company, Inc.* v. *Triangle Sporting Goods Company, Inc.*

3,528,866, L. D. Stevens, METHOD OF MAKING LAMINATED PADDED ARTICLE, **filed** Nov. 26, 1973, D.C., S.D. Fla. (Miami), Doc. 72–1699–C–NCR, *Arvin Industries, Inc.* v. *Anodyne, Inc.* Plaintiff owner of patent and patent is valid and has been infringed by defendant. Defendant hereby enjoined and counterclaim dismissed with prejudice, Nov. 26, 1973.

3,536,192. (See 3,452,368.)

3,567,080, M. S. Johnston, TAPPING DEVICE FOR BEER KEGS AND THE LIKE, **filed** Apr. 12, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–150, *Draft Systems, Inc.* v. *The Perlick Company, Inc.* Stipulation an order dismissing action without prejudice, Oct. 16, 1973.

3,593,550, I. L. Berkowitz, REFRIGERATOR DOOR HANDLE WITH CYLINDER DOOR LOCK UNIT ON THE HANDLE, **filed** Dec. 3, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73c1777, *Kason Hardware Corporation* v. *Instrument Systems Corporation and Buildex Incorporated.*

3,633,325, G. A. Bartoli, BUILDING STRUCTURE CANTILEVERED FROM VERTICAL CENTRAL SUPPORT, **filed** Nov. 23, 1973, D.C., M.D.N.C. (Greensboro), Doc. C–390–G–73, *Enterprises, Inc.* v. *International Second Home Corp. et al.*

3,698,677, R. Looker, PALLET FOR MOVING AND SECURING CARGO, **filed** Nov. 29, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2774–RJK, *Satco, Inc.* v. *Seaboard World Airlines.*

3,732,913, W. A. Wrono, ROLL-UP SLATTED SHADE ASSEMBLY, **filed** Nov. 21, 1973, D.C., S.D. Fla. (Fort Lauderdale), Doc. 73–155–C–JE, *Wrono Enterprise Corporation* v. *Sandor-Tapco, Inc.*

3,774,693, H. K. Orthman, AGRICULTURAL IMPLEMENT, **filed** Nov. 27, 1973, D.C., S.D. Ill. (Rock Island), Doc. RI–C–73–34, *Orthman Manufacturing, Inc.* v. *Deere & Company and Sampson Implement Company.*

Re. 25,536, D. T. Thompson, APPARATUS FOR MAKING AN ANNULUS, **filed** July 7, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1669, *Thompson Bagel Machine Mfg. Corp.* v. *Atwood Corp.* By stipulation, case dismissed, June 18, 1973.

Re. 26,492, Caveney and Moody, BINDER STRAP TOOL, **filed** Sept. 8, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2210, *Panduit Corp.* v. *Burndy Corporation et al.* Judgment order entered; case dismissed, Sept. 11, 1973.

Re. 26,871, Morkoski, Clendenin and Corwith, MATERIAL CHOPPING AND COMMINUTING DEVICE, **filed** July 14, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–365, *International Harvester Company* v. *Gehl Company.* Stipulation and order dismissing action without prejudice, Sept. 13, 1973.

D. 219,118, Baker and Plecia, BOAT, **filed** Nov. 14, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2669–LTL, *Sidewinder Marine, Inc.* v. *Glen-Coe Boat Mfg., Inc.*

D. 224,608, Okuhara and Okuhara, MIRRORED COSMETIC CONTAINER, **filed** Sept. 11, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2249, *Hideno N. Okuhara et al.* v. *Creative Concepts Corp. et al.* Summary judgment in favor of defendants. Suit dismissed with prejudice, Feb. 2, 1973.

D. 226,375, Wells, and Krusinski, AUTOMOBILE FLOOR MAT, **filed** Nov. 19, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2941, *Pretty Products Incorporated* v. *American Biltrite Incorporated.*

2,962,844, Martin and Spound, AUTOMATICALLY PROJECTIBLE HEADREST, **filed** Feb. 4, 1974, D.C.N.J. (Newark), Doc. 74–158, *Acme Battery Corporation* v. *Bright Star Industries, Inc.*

2,993,638, Hall, Helmer and Jepsen, ELECTRICAL VACUUM PUMP APPARATUS AND METHOD, **filed** Jan. 25, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–198–WTS, *Varian Associates* v. *Ion Equipment Corp.*

3,156,788, W. Kuskin, DAMPED MAGNETIC TELEPHONE RECEIVER, **filed** Jan. 24, 1974, Court of Claims (District of Columbia), Doc. 37–74, *T. H. Egley* v. *The United States.*

3,117,470, A. Galopin, CHARACTER SENSING SYSTEM; **3,423,594,** same, PHOTOELECTRIC SEMICONDUCTOR DEVICE WITH OPTICAL FIBER MEANS COUPLING INPUT SIGNALS TO BASE, **filed** Aug. 10, 1973, D.C., S.D. Iowa (Des Moines), Doc. C–73–154–1, *Anthony G. Galopin* v. *United States of America.*

3,183,529, G. Beuchat, SWIMMER'S FOOT-FIN WITH THRUST-ACCELERATING DEVICE; **3,603,306,** R. J. Bonin, Jr., SNORKEL, **filed** July 3, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1261–LTL, *U.S. Divers Company* v. *Under Sea Industries.* Filed plaintiff's notice of dismissal with prejudice, entered Dec. 5, 1973.

3,231,154, M. S. Johnston, SIPHON DEVICE FOR BEER KEGS AND THE LIKE; **3,353,724,** same, BEER TAPPING DEVICE; **3,435,997,** same; **3,497,114,** same, **filed** Aug. 14, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–1813–DWW, *The Perlick Co., Inc.* v. *Republic Corporation.* Filed stipulation dismissing complaint and counterclaims with prejudice, entered Dec. 10, 1973.

3,257,190, Q. F. Soper, METHOD OF ELIMINATING WEED GRASSES AND BROADLEAF WEEDS, **filed** Oct. 15, 1973, D.C., E.D. Mich. (Detroit), Doc. 74–70491, *Eli Lilly and Company* v. *Badasche Anilin- & Soda-Fabrik A.G.*

3,298,338, J. S. Clark, Sr., MEANS FOR REGULATING THE HEIGHT OF FUEL MOUNDS WITHIN A FURNACE, **filed** Jan. 29, 1974, D.C. Oreg. (Portland), Doc. C–74–71, *Joseph A. Clark, Sr.* v. *Edward Hines Lumber Company.*

3,353,724. (See 3,231,154.)

3,423,594. (See 3,177,470.)

3,435,997. (See 3,231,154.)

3,497,114. (See 3,231,154.)

3,512,221, R. J. Schoerner, ALUMINUM ALLOY WIRE; **3,670,401,** same, METHOD OF FABRICATING ALUMINUM ALLOY ROD, **filed** Feb. 14, 1973, D.C., E.D. Tex. (Tyler), Doc. S–73–CA–6, *Southwire Company* v. *Capital Wire & Cable Corp. and U.S. Industries, Inc.* Case dismissed, Oct. 29, 1973.

3,589,660, B. P. Dunckel, LIGHTING FIXTURE HANGER, **filed** Aug. 10, 1972, D.C., N.D. Miss. (Clarksdale), Doc. DC 72–54–S, *National Service Industries, Inc.* v. *Keene Corporation.* Final judgment on consent, parties compromised and settled differences by defendant continuing the sale of fixtures under the terms of a Patent License Agreement Jan. 28, 1974.

3,603,306. (See 3,183,529.)

3,627,177, Marcus and King, DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT, **filed** Jan. 14, 1974, D.C., S.D.N.Y., Doc. 74–C–219, *Knomark Inc.* v. *W. Braun Company, Inc.*

3,663,343, H. G. Buck, COMPOSITE PRESSURE SENSITIVE ADHESIVE SHEET STRUCTURE AND PROCESS OF MAKING THE SAME, **filed** Jan. 25, 1974, D.C., S.D.N.Y., Doc. 74–C–431, *Webtek Corporation* v. *Tapemakers Sales Co. Inc.*

3,670,401. (See 3,512,221.)

3,732,913, W. A. Wrono, ROLL-UP SLATTED SHADE ASSEMBLY, **filed** Jan. 30, 1974, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL)–74–36–C–JE, *Wrono Enterprise Corporation* v. *Armor Shield Aluminum Products, Inc. and Armor Shield Products Company.*

Re. 24,017, J. A. Henricks, METHOD OF COATING AND DRAWING METAL AND COMPOSITION THEREFOR, **filed** May 21, 1968, D.C. Del. (Wilmington), Doc. 3545, *Devex Corporation and Technograph Inc. et al.* v. *General Motors Corporation.* Stipulation and order dismissing C.A. 3545 transferring all documents to Civil Action 3058 which continues, Jan. 29, 1974.

Re. 26,475, L. A. Cohen, COMPOSITE SPACE VEHICLE, **filed** Dec. 27, 1968, Court of Claims, (District of Columbia), Doc. 380–68, *Leonard A. Cohen* v. *The United States.* Only claim 8 alleged to be infringed. Held that, because of intervening rights under 350 USC 252, defendant's accused device did not infringe and that defendant could repair and use that device. Judgment for defendant, plaintiff's petition dismissed, Nov. 14, 1973.

Re. 26,667, S. G. Sarbo, FOOT COVER AND METHOD OF MANUFACTURING THE SAME, **filed** Feb. 5, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–288, *Wayne-Gossard Corporation* v. *Sondra Manufacturing Co.*

D. 203,251, A. L. Barber, CONTOUR PILLOW OR THE LIKE, **filed** Jan. 28, 1974, D.C., W.D. Okla. (Oklahoma City), Doc. 74–111–C, *A & B Instrument Company, Inc. and Mid-America Sales and Marketing, Inc.* v. *Sears, Roebuck & Company.*

Certificates of Correction for the Week of Mar. 19, 1974

D. 225,129	3,711,428	3,750,189	3,758,811
D. 228,789	3,712,950	3,750,545	3,759,031
Re. 27,730	3,715,278	3,751,365	3,759,224
3,492,248	3,715,333	3,751,434	3,759,266
3,527,739	3,715,359	3,751,461	3,759,831
3,547,732	3,716,046	3,751,504	3,759,903
3,597,196	3,717,973	3,751,512	3,760,489
3,607,215	3,720,120	3,751,617	3,760,515
3,617,168	3,721,696	3,751,682	3,760,781
3,617,220	3,723,102	3,752,579	3,761,180
3,641,234	3,724,383	3,752,855	3,761,660
3,641,235	3,725,372	3,753,386	3,761,982
3,645,065	3,725,437	3,753,530	3,762,043
3,646,007	3,725,508	3,753,554	3,762,317
3,650,803	3,727,777	3,753,576	3,762,532
3,652,562	3,729,017	3,753,604	3,762,604
3,653,432	3,729,032	3,753,686	3,762,856
3,655,817	3,729,254	3,753,990	3,763,118
3,656,503	3,729,576	3,754,088	3,763,365
3,661,538	3,731,108	3,754,451	3,763,399
3,662,106	3,733,409	3,754,466	3,763,442
3,662,122	3,734,652	3,754,473	3,763,548
3,663,161	3,735,557	3,754,516	3,764,108
3,663,528	3,736,575	3,754,568	3,764,318
3,664,519	3,736,725	3,754,698	3,764,448
3,668,156	3,736,785	3,754,811	3,764,462
3,669,103	3,737,534	3,755,063	3,764,572
3,669,591	3,737,719	3,755,166	3,764,609
3,670,135	3,738,276	3,755,261	3,764,792
3,691,810	3,738,736	3,755,501	3,764,902
3,691,840	3,739,883	3,755,788	3,764,983
3,693,564	3,740,292	3,755,805	3,765,224
3,692,006	3,740,980	3,755,833	3,766,066
3,670,901	3,742,805	3,755,883	3,766,093
3,674,415	3,743,005	3,756,005	3,766,687
3,676,344	3,743,092	3,756,361	3,766,766
3,681,502	3,743,172	3,756,709	3,767,013
3,683,128	3,743,352	3,756,852	3,767,100
3,685,539	3,743,475	3,756,945	3,767,158
3,686,321	3,743,659	3,757,036	3,767,339
3,689,473	3,745,035	3,757,156	3,767,720
3,694,232	3,745,813	3,757,375	3,768,282
3,694,420	3,746,219	3,757,699	3,769,367
3,695,902	3,747,212	3,757,715	3,769,799
3,697,287	3,747,387	3,757,765	3,769,836
3,701,433	3,747,710	3,757,965	3,769,963
3,702,010	3,747,983	3,758,095	3,771,428
3,703,524	3,748,643	3,758,150	3,772,602
3,704,214	3,749,579	3,758,558	
3,705,153	3,749,807	3,758,691	
3,710,282	3,750,160	3,758,737	

Disclaimer

3,741,958.—*Peter Wolfgang Henniger*, Leiden, Netherlands. 6-AMINOPENICILLANIC ACID DERIVATIVES AND PROCESS FOR PRODUCING. Patent dated June 26, 1973. Disclaimer filed Sept. 26, 1973, by the assignee, *American Home Products Corporation*.

Hereby enters this disclaimer to claim 10 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent application 327,982. Formaldehyde Based Disinfectants. Filed Jan. 30, 1973. PC $3/MF $1.45.

Patent application 388,305. Solder Leveling. Filed Aug. 14, 1973. PC $3/MF $1.45.

Patent 3,742,720. Quantitative Recovery of Krypton From Gas Mixtures Mainly Comprising Carbon Dioxide. Filed July 25, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,742,757. Cell for Measuring Stresses in Prestressed Concrete. Filed Oct. 18, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,569. Armor of Cermet With Metal Therein Increasing With Depth. Filed Apr. 2, 1970. Patented July 3, 1973. Not available NTIS.

Patent 3,743,696. Separation of Americium and Curium. Filed Feb. 4, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,743,986. Improved Resistive Envelope for a Multifilament Superconductor Wire. Filed Feb. 8, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,744,975. Rotor for Multistation Photometric Analyzer. Filed Dec. 9, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,401. Filament Support Structure for Large Electron Guns. Filed Feb. 15, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,745,481. Electrodes for Obtaining Uniform Discharges in Electrically Pumped Gas Lasers. Filed June 13, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,746,175. Compact Dialyzer. Filed Sept. 14, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,746,616. Stabilized Uranium or Uranium-Plutonium Nitride Fuel. Filed July 20, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,746,859. High Intensity Neutron Source. Filed Apr. 22, 1970. Patented July 17, 1973. Not available NTIS.

Patent 3,747,001. Pulse Processing System. Filed Feb. 17, 1972. Patented July 17, 1973. Not available NTIS.

Patent 3,747,410. Indium-Sesquioxide Vacuum Gauge. Filed July 5, 1972. Patented July 24, 1973. Not available NTIS.

Patent 3,749,915. Solid State Radiation Detector. Filed Apr. 11, 1972. Patented July 31, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 276,064. Method for Reducing Pulp Chip Deterioration With Aqueous Solutions of Sodium N-Methyldithiocarbamate. Filed July 28, 1972. PC $4/MF $1.45.

Patent 3,717,067. Underlayment Fastening Device. Filed Jan. 7, 1971. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,718,262. Two Cable Tension-Controlled Carriage. Filed Feb. 24, 1971. Patented Feb. 27, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent 3,776,909. 4,6-Diamono-1(p-Benzyloxyphenyl-1,2-Dihydro-2,2-Dimethyl-s-Triazines. Filed Apr. 19, 1972. Patented Dec. 4, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent application 407,389. Non-Plugging Pressure Tap. Filed Oct. 17, 1973. PC $3/MF $1.45.

Patent application 414,832. MHD Power Generation. Filed Nov. 12, 1973. PC $3/MF $1.45.

Patent 3,320,591. Metering System Responsive to Interrogations From a Central Station. Filed Dec. 13, 1962. Patented May 16, 1967. Not available NTIS.

Patent 3,327,396. Extensometer. Filed Mar. 10, 1965. Patented June 27, 1967. Not available NTIS.

Patent 3,347,370. Proces for Washing and Removing Organic Heavy Liquids From Mineral Particles. Filed Oct. 31, 1963. Patented Oct. 17, 1967. Not available NTIS.

Patent 3,412,184. Process for the Preparation of Cellulosic Ester Reverse Osmosis Membranes. Filed Feb. 17, 1966. Patented Nov. 19, 1968. Not available NTIS.

Patent 3,500,934. Fly Ash Injection Method and Apparatus. Filed Sept. 9, 1968. Patented Mar. 17, 1970. Not available NTIS.

Patent 3,508,431. System for Calibration of a Differential Pressure Transducer. Filed Sept. 5, 1968. Patented Apr. 28, 1970. Not available NTIS.

Patent 3,509,325. Bidirectional Counter Apparatus With Separate Detectors. Filed Nov. 15, 1966. Patented Apr. 28, 1970. Not available NTIS.

Patent 3,513,813. Dilute Phase Particulate Matter Reactor-Heat Exchanger. Filed Dec. 31, 1968. Patented May 26, 1970. Not available NTIS.

Patent 3,525,589. Production of Boron Carbide Whiskers. Filed May 17, 1968. Patented Aug. 25, 1970. Not available NTIS.

Patent 3,532,330. Seal and Trommel for a Rotary Kiln. Filed Dec. 20, 1968. Patented Oct. 6, 1970. Not available NTIS.

Patent 3,733,779. Method for Smelting Low-Sulfur Copper Ores. Filed May 28, 1968. Patented Oct. 13, 1970. Not available NTIS.

Patent 3,542,908. Method of Manufacturing a Reverse Osmosis Membrane. Filed Mar. 22, 1968. Patented Nov. 24, 1970. Not available NTIS.

Patent 3,565,766. Copyrolysis of Coal and Heavy Carbonaceous Residue. Filed Jan. 24, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,567,412. Gasification of Carbonaceous Fuels. Filed Aug. 12, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,567,427. Chemical Disaggregation of Rock. Filed Nov. 7, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,573,182. Process for Separating Zinc and Copper. Filed Jan. 11, 1968. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,594,329. Regeneration of Zinc Chloride Catalyst. Filed July 23, 1969. Patented July 20, 1971. Not available NTIS.

Patent 3,594,860. Method for Shucking and Eviscerating Bivalve Mollusks. Filed Nov. 12, 1969. Patented July 27, 1971. Not available NTIS.

Patent 3,632,990. Data Readout and Recording Apparatus. Filed Feb. 18, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,639,810. Power System Monitoring Relay. Filed Feb. 18, 1971. Patented Feb. 1, 1972. Not available NTIS.

Patent 3,650,931. Purification of Reactive Metals. Filed June 5, 1969. Patented Mar. 21, 1972. Not available NTIS.

Patent 3,656,048. Non-Linear Exciter Controller for Power Systems Damping. Filed July 16, 1970. Patented Apr. 11, 1972. Not available NTIS.

Patent 2,775,308. Method for Preparation of Composite Semipermeable Membrane. Filed May 18, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,776,718. Recovery of Copper and Steel From Scrap. Filed July 13, 1973. Patented Dec. 4, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent 3,561,346. Blast Actuated Module Valve. Filed Feb. 26, 1969. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,562,451. Microphone and Headset for Underwater Swimmer. Filed June 11, 1968. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,563,499. Mechanism To Transfer Engine Torque and Control Motion Across Helicopter Rotor Vibration Isolator. Filed Jan. 15, 1969. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,563,858. Aeration and Foam Control in Sparged Fermentation. Filed Sept. 27, 1967. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,564,304. Electrode Configuration for Tubular Piezoelectric High-Strain Driver. Filed Sept. 22, 1969. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,564,445. Circuit for Eliminating Crossover Distortion in Solid State Amplifiers. Filed Oct. 9, 1968. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,564,481. Electrical Connector. Filed Jan. 13, 1969. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,565,060. Biopotential Sensor Employing Integrated Circuitry. Filed Aug. 21, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,565,516. Extended Range Underwater Optics System. Filed July 25, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,565,700. Method for Preparing and Purifying Pure Dry Fluoride Materials. Filed Dec. 10, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,068. Apparatus for Aligning and Arc-Removing Turbine Nozzle Vanes. Filed Aug. 29, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,106. Nonmicrophonic Infrared Gas Analyzer. Filed Jan. 2, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,118. An Axially Aligned Gamma Ray-Neutron Detector. Filed Nov. 14, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,567,698. Thermally Stable Silarylene-1,3,4-Oxadiazole Polymers Soluble in Organic Solvents. Filed Sept. 2, 1969. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,568,079. Acoustic Signal Amplifier. Filed Apr. 24, 1969. Patented Mar. 2, 1971. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 412,379. Anti-Multipath Digital Signal Detector. Filed Nov. 2, 1973. PC $3/MF $1.45.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 2, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-17-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-15-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-04-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-25-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-28-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-25-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-15-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-23-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-05-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-18-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-08-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-11-73

Expiration of patents: The patents within the range of numbers indicated below expire during March 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,783,468 to 2,786,999, inclusive
Plant Patents..... Numbers 1,575 to 1,585, inclusive

REISSUES

MARCH 19, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

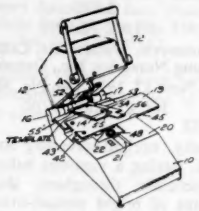
27,941
DATA PUNCHING MACHINE

John H. Edwards, Attleboro, Mass., assignor to The Entwistle Co.

Original No. 3,633,817, dated Jan. 11, 1972, Ser. No. 888,237, Dec. 29, 1969. Application for reissue July 12, 1972, Ser. No. 270,940

Int. Cl. G06k *1/08*

U.S. Cl. 234—77 **3 Claims**



This invention relates to a machine which will punch a form in a particular code pattern under the control of a template. It will also imprint letters that are raised from the surface of the template. This is accomplished by providing two portions which are hinged together and which have a template holding plate therebetween. One of the portions carries a plurality of individually movable plungers that are adapted to enter perforations provided in the template held on the template support and pass through the template and into a form held by the other portion when the two portions are brought together by an operating handle. Means are provided on the template support plate to properly orient the template relative to the two portions and the punches are operated by the handle being coupled thereto through a linkage arrangement. Additionally coupled to the handle is a printing pressure roller which passes across the raised lettering that is provided on the template so that an imprinting action will occur simultaneous with the punching of the form.

27,942
AUTOMOBILE PARTITION APPARATUS PIVOTED ON GUARDPLATE

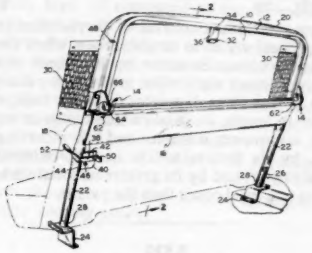
John R. Setina, Rte. 5, Box 522, Olympia, Wash. 98501

Original No. 3,510,164, dated May 5, 1970, Ser. No. 758,947, Sept. 11, 1968. Application for reissue Dec. 13, 1971, Ser. No. 207,582

Int. Cl. B62d *33/04*

U.S. Cl. 296—24 R **10 Claims**

An automobile partition apparatus for shielding the front seat area is described in which the partition is pivotally mounted on a guard plate member secured between the leg portions of a roll bar and extending across the width of the automobile along the rear of the front seat backrest. The partition apparatus includes a spring biased pivot mechanism which, when a latch is released, automatically pivots the partition from a lowered position behind the backrest to a raised position between the top of such backrest and the roof of the automobile The guardplate member extends downward substantially parallel to the front seat backrest a sufficient distance to enable the partition apparatus to be employed in auto-



mobiles of different seat backrest heights and allows back and forth seat adjustments while still protecting the driver of a police car, taxicab or other vehicle from passengers riding in the rear seat.

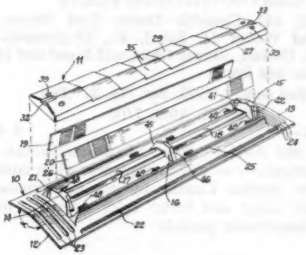
27,943
ROOF RIDGE VENTILATOR

Lester L. Smith, Peoria, Ill., assignor to H. C. Products Co., Princeville, Ill.

Original No. 3,625,134, dated Dec. 7, 1971, Ser. No. 16, Jan. 2, 1970. Application for reissue June 16, 1972, Ser. No. 263,701

Int. Cl. F24p *7/02*

U.S. Cl. 98—42 **11 Claims**



A roof ridge ventilator made of molded plastic parts except for louvered metal sheets closing the open sides of the ventilator, the design providing a low silhouette with a large air flow area through the louvered sheets by sloping the louvered sheets. Stiffness is built into the thin flashing forming part of the ventilator by molding beads into the flashing to inhibit buckling, particularly under extremes of temperature. The ventilator is formed from two molded parts to one of which the louvered sheets which, when fastened together, form a unit which may be installed in multiples to cover any desired length of roof ridge vent opening.

PLANT PATENTS

GRANTED MARCH 19, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,521
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 10, 1971, Ser. No. 170,669
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Streamer by its bronze color, approximately 3" more vigor when grown under comparable conditions, two to three days later response, foliage ¼" to ½" shorter in length, its petals which comprise straighter tubes with a narrower diameter and less incurving of the petal tips, by its flowers which are approximately ½" larger in diameter, and by its greater seasonal variation in flower form and petal count than the parent.

3,522
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 28, 1972, Ser. No. 310,030
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous growth, suitability as a greenhouse cut flower variety, nonfading and nonblueing Currant Red flower color, its characteristic three leaflet leaves on the upper several nodes, and its relatively high degree of resistance to rose powdery mildew.

3,523
CHRYSANTHEMUM PLANT

Ralph Bond, 647 Camellia Drive, Fort Myers, Fla. 33902, and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio; said Jessel and Duffett assignors to said Bond

Filed Aug. 4, 1972, Ser. No. 277,866
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Dazzler by its more intense red-bronze flower color and better color retention in high light, high temperature periods.

3,524
ROSE PLANT

Samuel McGredy, % S. McGredy & Sons, Portadown, Northern Ireland

Filed Sept. 25, 1972, Ser. No. 291,574
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose of the Floribunda class primarily characterized by its dense, compact habit of growth with short internodes and profuse branching essentially hiding the canes from view; its tendency to produce flowering laterals one half to two thirds the length of the basal canes; its shiny, leathery, dark green, highly disease resistant large foliage which frequently carry seven leaflets, its perfectly spiralled petals of great substance which form its high centered, durable, semi-double flowers and by its color tones which range from soft Azalea Pink to rich Indian Orange which in turn mutate in aging from the more orange, darker color tones to the softer pink colors and which age and finish gracefully under all conditions and which clean before the petals spoil.

3,525
ROSE PLANT

Walter E. Lammerts, Watsonville, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Nov. 17, 1972, Ser. No. 307,425
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 **1 Claim**

A small, bushy, upright-spreading rose plant of the floribunda class, having a vigorous habit of growth and producing, practically throughout the season, very numerous blooms of bright pinkish-orange color, these being borne in irregular clusters of usually three or more to a stem. The blooms have a moderate spicy fragrance and range from 2¼" to 2⅝" in diameter. They average about 85 pistils, with 20 to 30 petals and 10 to 18 petaloids. The foliage, which is abundant, is dark green and semi-glossy. It has more than average resistance to mildew.

3,526
CHRYSANTHEMUM PLANT

Keith D. Butters, Littlehampton, England, assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 3, 1972, Ser. No. 240,859
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of daisy form chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Bronze Marble by its darker, more intense bronze color.

3,527
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed June 19, 1972, Ser. No. 264,305
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Icecap by its longer recommended period of flowering and its less thermo-negative nature; its ten week response as compared to the twelve week response of Icecap; flowers approximately one-quarter to one-half inch smaller in diameter; approximately two more flowers per stem; a more green coloration in the center of the flowers; a flower form which is more decorative and less formal than Icecap, and by its foliage which is more coarse in texture.

3,528
CHRYSANTHEMUM PLANT
Barrie John Machin, Arundel, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England
Filed July 28, 1972, Ser. No. 275,980
Int. Cl. A01h 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a wiry, upright plant with incurving pale yellow flowers having 250 to 280 ray petals, about ten percent or less disc petals, and an average diameter of about 15 cm.

3,529
STRAWBERRY PLANT
Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.
Filed June 7, 1972, Ser. No. 260,694
Int. Cl. A01h 5/03
U.S. Cl. Plt.—49 1 Claim

1. A new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

3,530
CHRYSANTHEMUM PLANT
Grace H. Mack, 108 Wahackne Road, New Canaan, Conn. 06840, and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio; said Jessel and Duffett assignors to said Mack
Filed July 10, 1972, Ser. No. 269,943
Int. Cl. A01h 5/00
U.S. Cl. Plt.—74 1 Claim

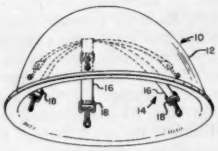
1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Tango by its flowers which are approximately ¾" smaller in diameter; its daisy or single form rather than an anemone form; lighter foliage color; an earlier natural season flowering date, flowering from approximately Sept. 25 compared to approximately Oct. 8 for Tango, and by its more compact habit with approximately three inches less vigor; and characterized particularly as to its uniqueness when compared to the cultivar Mischief by its flowers which are approximately ¼" larger in diameter; an earlier natural season date, flowering approximately Sept. 25 as compared to approximately Oct. 12 for Mischief; its much lighter pink color with better color retention; a smaller disc providing perfect florets; approximately 3" shorter habit; lighter foliage color; less prominent stipules, and its approximately 3–4 days longer keeping quality.

PATENTS

GRANTED MARCH 19, 1974

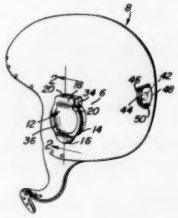
GENERAL AND MECHANICAL

3,797,039
SAFETY HELMET
Harvey Larry Penberthy, 631 S. 96th St., Seattle, Wash.
Filed Apr. 10, 1972, Ser. No. 242,440
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **10 Claims**



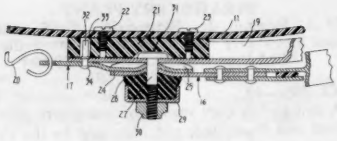
A safety helmet is provided with a crown suspension comprised of relatively inelastic crown straps secured to the helmet shell with energy-absorbing links. The links incorporate an energy-absorbing midsection designed to deform and elongate under substantially constant transmitted force conditions to a predetermined point and to thereafter rapidly transmit higher impact forces with only slight further elongation.

3,797,040
HELMET CONSTRUCTION
Jack N. Caldwell, 1500 Holly Ave., Merritt Island, Fla.
Filed Apr. 20, 1972, Ser. No. 245,845
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **7 Claims**



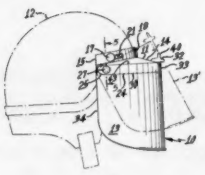
A protective-type helmet expressly for use by a motorcyclist and unique in that a pair of manually controlled spring-loaded door-like lids or ear flaps are hingedly installed for coaction with hearing holes located in line with the user's ears. When fully open, the ear flaps stay put until intentionally closed by the wearer. Being spring-biased and correctly aligned and pivotally mounted they stay normally closed. Each door or flap embodies a suitable rubber gasket inside to provide and to insure a reliable airtight seal while the motorcycle is in motion. A smaller but similar spring-loaded pivoted door or flap is mounted on the median lower portion of the helmet's rear wall to permit an appropriate normally spring-loaded door to be used in a convenient manner to fasten and anchor the helmet on a part of the motorcycle which is not being ridden. All three doors may be basically alike in construction and general manner of use.

3,797,041
FACE SHIELD BRACKET MOUNT FOR HELMETS
Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed Mar. 16, 1972, Ser. No. 235,224
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **3 Claims**



An assembly for mounting a face shield on a protective hard hat. The assembly has an arcuate support member which defines channel portions at least in the region of its two ends. A correspondingly shaped arcuate frame member is pivotally mounted with respect to the support member. The frame member is adapted to secure a depending face shield therefrom. The frame member and face shield are mounted on a hard hat by the support member with a pair of elongate blocks which are insertable within the channel portions of the support member. The elongate blocks are fastened to opposed exterior sidewalls of the hard hat. Also included are releasable retainer means at a fixed location therealong when the blocks are fastened to the hat.

3,797,042
VISOR AND FACE SHIELD HELMET ATTACHMENT
Lawrence J. Gager, Jr., 3355 Dorthea Rd., Jacksonville, Fla.
Filed July 14, 1972, Ser. No. 271,984
Int. Cl. A41d *13/00*
U.S. Cl. 2—10 **6 Claims**

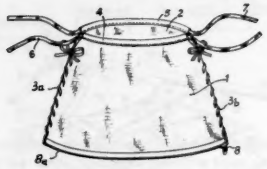


A visor releasably attached to a helmet with a flexible face shield pivotally mounted to the visor, the shield including a pair of spaced shoulders which engage the visor and automatically lock the shield in the vertical position covering the face. A hand hold is provided on the shield to permit temporary outward deformation of the shield and to exert an upward force for pivoting the shield. Adjustable friction means are associated with each pivot so that the shield may be positioned and maintained in a multiplicity of positions.

3,797,043
SKIRT CONVERTIBLE INTO A TOTE BAG

Max Brument, Paris, France, assignor to Herve et Fils Papeteries du Sentier (Societe Anonyme), Paris, France

Filed Dec. 30, 1971, Ser. No. 213,876
Claims priority, application France, Aug. 6, 1971, 71.28944
Int. Cl. A41d *15/04, 1/14*
U.S. Cl. 2—69.5 3 Claims



A skirt adapted to be converted into a tote bag, having laterally and longitudinally united front and back panels, means attached to the waist of the skirt to serve as manually engageable carrying devices and closable means attached to the lower edge of the skirt for closing the lower opening thereof thus converting the skirt into a bag.

3,797,044
TIE MARKER

Ho Chow, 31 Coles Ct., River Edge, N.J.

Filed Aug. 11, 1972, Ser. No. 279,996
Int. Cl. A41d *25/06*
U.S. Cl. 2—146 6 Claims

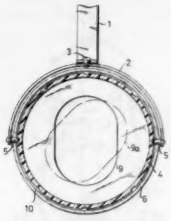
A Tie Marker affixed to a tie at a specific location to start a knot for tieing the tie around a person's neck or any object to assure a certain desirable tie length at each tieing time.

3,797,045
TURNING DEVICE FOR THE BAIL OF AN EAR PROTECTOR

Yrjo Aho, Kuninkaantie, Westend, Finland

Filed Aug. 11, 1972, Ser. No. 280,042
Claims priority, application Finland, Aug. 12, 1971, 2253/71
Int. Cl. H04r *1/10*
U.S. Cl. 2—209 3 Claims

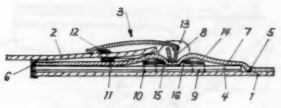
An ear piece having a bail joined to ear piece through fork-like members and connecting means at the end of said fork-like members on the outer circle of the ear piece and near to the packing level of said ear pieces turning means for said bail ring-shaped means carrying said connecting means, bearing means in said ear pieces supporting said ring-shaped means so that when the user wants to turn the bail over the top of his head on his neck or into another position of use, the ring means rotates in its slot with the bail and the fork-like member, while the ear pieces remain in position.



3,797,046
WAISTBAND FOR TROUSERS AND SLIDE FASTENER THEREFOR

Fritz Hoch, Techniker, Pforzheim, Germany, assignor to Gutos Metallschliebenfabrik Bader & Hoch K.G., Pforzheim, Germany

Filed June 4, 1973, Ser. No. 366,622
Claims priority, application Germany, July 22, 1972, 7227209
Int. Cl. A41f *9/00*
U.S. Cl. 2—237 12 Claims



The slide fastener serves to adjustably connect a first waistband section and a second waistband section, which overlaps said first waistband section on the outside thereof. A plastics material guide rail is adapted to be secured to said first waistband section. A slide buckle is adapted to be secured to said second waistband section and comprises a base part in guided engagement with and slidable along said guide rail and an eccentric clamping member disposed on the outside of and pivoted to said base part. A fabric strip overlies said rail on the outside thereof throughout its length and extends between said base part and said eccentric clamping member and has opposite ends adapted to be sewn to said second waistband section. Said eccentric clamping member is operable to releasably clamp said strip against said base part in any desired position thereof along said rail.

3,797,047
ARTIFICIAL TENDON

Jean Pillet, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Apr. 28, 1972, Ser. No. 248,692
Claims priority, application France, Apr. 30, 1971, 71.15544
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 6 Claims

A tendon of artificial materials which are tolerated by the organism and of which the ends, which can be stitched, show good properties of adhesion to the tissues whilst the middle portion remains non-adherent.

The artificial tendon, which is inextensible and is of a length which can be adjusted according to the needs of the surgeon,

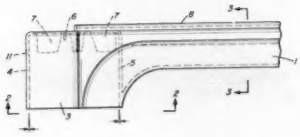
comprises a suturable textile strip which is such as to permit fibroblastic infiltration and which is sheathed at its longitudinal central portion in a flexible tube which is non-adherent to tissue.

3,797,048

INTEGRALLY MOLDED HEADER AND CURTAIN RAIL

James Edwards Chisholm, Safety Harbor, Fla., and Anthony Buonaura, Baldwinsville, N.Y., assignors to Formica Corporation, Cincinnati, Ohio

Filed Apr. 24, 1972, Ser. No. 246,619
Int. Cl. A47k *3/23*
U.S. Cl. 4—146 **8 Claims**



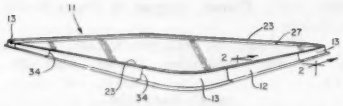
A header unit adapted to form the uppermost portion of a shower stall entranceway comprising an elongated section of "V" shaped cross-section, stile receiving members attached to both ends thereof, knob-like members at the bottom interior of said stile receiving members and a shower curtain rail positioned lengthwise along the rear portion of said section.

3,797,049

MODULAR PORTABLE SKATING RINK

Maurice De Santo, Reading, Mass., assignor to DeSanto, Dulong and Welsh, Burlington, Mass.

Filed Nov. 9, 1972, Ser. No. 305,187
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **11 Claims**



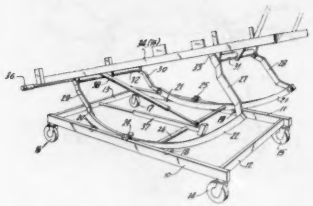
A modular portable skating rink or wading pool having preformed side elements and clamping means to secure a plastic liner material in place to the sides. In the preferred embodiment the clamp is maintained in place partially by the pressure of the water or ice within the structure.

3,797,050

SHOCK AND DRAINAGE MECHANISM

Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, both of Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,676
Int. Cl. A61g *7/10, 7/06*
U.S. Cl. 5—62 **9 Claims**



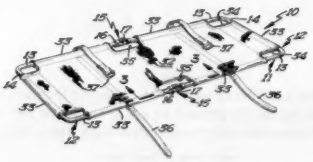
A novel mechanism for positioning a hospital bed in a plurality of shock and drainage positions utilized means for rotating the base of a support parallelogram in an arc. The rotating means are a pair of roller supported arc segments with the lower pivoting points of the support parallelogram positioned at the lower extremities of the arc segments. A crank mechanism positioned on the bed frame moves the rocker arms such that the desired shock or drainage position is attained and the bed may be raised or lowered while in any shock or drainage position.

3,797,051

FOLDABLE COT

Jack R. Evans, No. 2 Fairway Dr., Tuscaloosa, Ala.

Filed Feb. 10, 1972, Ser. No. 225,106
Int. Cl. A61g *1/00, 7/10*
U.S. Cl. 5—82 **5 Claims**



A foldable stretcher includes a pair of U-shaped frame members hingedly connected together to permit folding of the stretcher between a normal extended position and a folded position. A flexible support panel is secured to the U-shaped frame sections and is provided with recesses or cutouts adjacent the corners and hinge connections of the stretcher to facilitate carrying thereof. A pair of lock bolts are provided, each being positioned within the leg of one U-shaped frame section and being urged by a coil spring into the leg of the other U-shaped frame section when the stretcher is in the extended position. A pair of retaining cam elements are provided for retaining the lock bolts in a retracted position when the stretcher is in the folded position.

3,797,052

TRENDELENBERG MECHANISM

Charles Licina, Thornton, Ill.; Robert E. Miller, Dyer, and Nathaniel H. Taylor, Highland, both of Ind., assignors to Simmons Company, New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 231,916
Int. Cl. A61g 7/10; A47c 3/32
U.S. Cl. 5—63 5 Claims

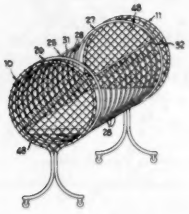
A Trendelenberg mechanism for variable height beds of the kind having legs telescopically extensible from and retractable into the corner posts thereof by means of flexible cables extending from the legs to a cable-hauling mechanism, in which the cables are connected to the cable-hauling mechanism in pairs each respectively associated with one of the ends of the bed, and in which one of the cable pairs is disconnectible from the cableehauling mechanism at either of the fully raised or fully lowered positions of the bed and retained at such position while the cable-hauling mechanism is operated to lower or raise the other end of the bed, respectively, thereby to tilt the bed longitudinally in either direction, i.e., to place the occupant in the "head-down" or Trendelenberg position, or in the "head-up" or reverse Trendelenberg position.

3,797,053

ADJUSTABLE CRIB WITH VARIABLE DEGREES OF CONFINEMENT AND ACCESSIBILITY

Anthony C. Mamo, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,454
Int. Cl. A47c 27/08, 17/14
U.S. Cl. 5—97 15 Claims



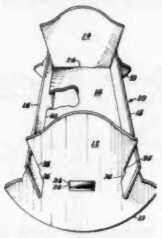
A rigid, open-ended enclosure, essentially defining a split or interrupted cylinder, is mounted for rotation around a fixed mattress support which extends between and is held by head and foot leg structures. A pair of end walls, fixed relative to the rotatable enclosure, terminate the enclosure at its ends. The split or interruption provides an access opening and by rotating the enclosure through 360° to different predetermined positions the accessibility to a child in the crib may be varied and at the same time the extent to which that child is confined or retained may be varied. In one of the positions, the access opening lies below the mattress support thereby maximizing the confinement effected by the enclosure and, of course, minimizing the accessibility.

3,797,054

BED CONSTRUCTION

Mario R. Sly, 7100 Grandview Ave., Arvada, Colo.

Filed Feb. 7, 1972, Ser. No. 223,833
Int. Cl. A47d 9/00
U.S. Cl. 5—101 3 Claims



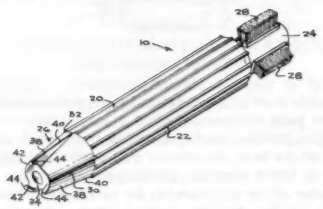
A bed or crib which is readily and conveniently assembled and dis-assembled, without tools, in which releasable support is achieved by the interengagement of notches respectively provided by the side rails and the end frames.

3,797,055

TOOL FOR REMOVING LIGHTBULB BASES AND CLEANING LIGHTBULB SOCKETS

William H. Greene, 2114 Oakland St., Savannah, Ga.

Filed Dec. 12, 1972, Ser. No. 314,436
Int. Cl. B25f 1/00
U.S. Cl. 7—1 G 11 Claims



A hand tool comprising an elongated metal member is disclosed with a central portion comprising a handle, one end of said tool being for cleaning a lightbulb socket and having radially extending brushes with abrasive means on the end of the member adjacent the brushes for cleaning the base contact of a socket while the brush means cleans the threaded side walls of the socket and the other end of the tool comprising a lightbulb base removal tool including a tapered conical member with radial flanges and end flanges insertable in a lightbulb base for gripping and removing the base from a socket.

3,797,056

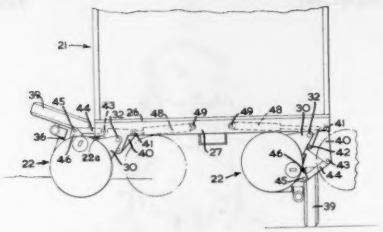
AMPHIBIOUS VEHICLE

William Jackson Brady, R. R. No. 3, Thunder Bay, Ontario, Canada

Filed Oct. 25, 1972, Ser. No. 300,610
Claims priority, application Canada, June 2, 1972, 143713
Int. Cl. B63c 13/00
U.S. Cl. 9—1 T 1 Claim

An amphibious vehicle includes a body and a pontoon/road wheel assembly on each side pivotally connected to the body for angular movement about an axis parallel to the length of the body between a land travelling position in which the wheels are engageable with the ground and the pontoons are in a laterally inner position, and a water travelling position in which the pontoons are in a laterally outer position. Each pon-

toon/road wheel assembly includes a transverse bulkhead member with pontoon portions extending forwardly and rearwardly therefrom, and each bulkhead member carries a road wheel assembly externally of the pontoon. A fluid pressure



jack is connected between the body and each bulkhead member for effecting movement of each pontoon/road wheel assembly between land travelling and water travelling positions.

3,797,057

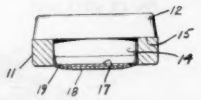
SLIDEABLE PUCK

Stanley Smelden, 240 W. Victoria St., Gardenia, Calif.

Filed Mar. 21, 1973, Ser. No. 343,344

Int. Cl. A63b *71/00*

U.S. Cl. 273—128 R **9 Claims**



A slideable puck of novel design for use with a shuffleboard table. The puck is constructed of a substantially solid aluminum base member having a stud portion which defines a shoulder on the base. An annular ring portion constructed of steel has an inside diameter defining an interference fit with the diameter of the stud member for permanently nesting the steel ring on the shoulder portion of the aluminum base member. The thickness of the ring is greater than the height of the stud portion for defining a recess portion. A disc of fabric material, preferably felt, is located in the recess. The puck is propelled on the felt material, which places the heavier steel portion closest to the table. The steel ring has an outside diameter greater that the outside diameter of the aluminum base member for absorbing impact damage resulting from contacting other objects.

3,797,058

APPARATUS FOR CLEANING LARGE RINGS

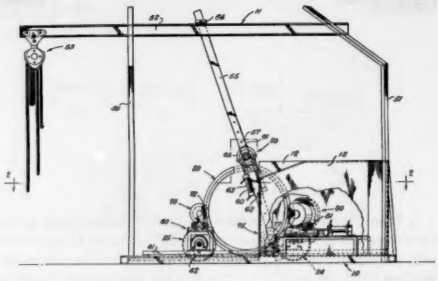
Robert D. Neal, 1902 Kirkwood Cir., Carrollton, Tex.

Filed Dec. 11, 1972, Ser. No. 313,772

Int. Cl. A46b *13/02*

U.S. Cl. 15—21 D **11 Claims**

For cleaning die pallet rings which may range in diameter from 18 in. to over 6 ft., and which consist of a generally cylindrical rim portion, an outer flange, and an inner flange, the cleaning apparatus includes support means consisting of a base carrying two rotatable support wheels for supporting and guiding the ring, and an adjustable guide wheel on a standard for guiding the upper periphery of the ring and supporting the ring in a vertical plane. One of the base support wheels is adjustable to accommodate rings of different size. A powered radial brush for cleaning the rim surface of the ring, is adjustably mounted on the frame to position the brush relative to a particular size of ring, and is also movable by a power cylinder into and out of engagement with the surface to be cleaned during operation. Two powered cup brushes are mounted on the frame to engage side surfaces of the ring, each of these being mounted for reciprocating movement into and out of engagement with the ring during operation by a power



cylinder. The brush units may be mounted on suitable carriages for movement parallel to the plane of the supported ring, to accommodate rings of different size. An overhead frame supports a track and hoist for loading and unloading rings from the apparatus.

3,797,059

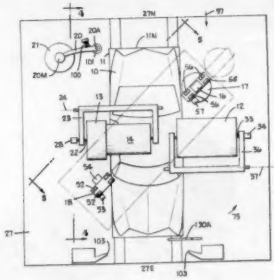
TURNTABLE CAR WASH

Judson L. Smith, 3340 S. Butte, Apt. 9, Tempe, Ariz.

Filed Oct. 12, 1971, Ser. No. 188,292

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **14 Claims**



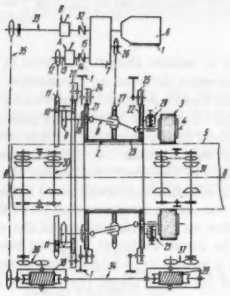
A power driven turntable has a conveyor thereon for moving a car onto the turntable while the turntable is held at rest. A control then locks the coneyor to hold the car in place on the turntable as it is rotated by a motor therefor. Means are provided by which individual components such as a wheel scrubbing brush can operate on said turntable. Brushes are mounted on horizontal axes mounted on arms hinged from above, and engageable with upwardly facing surfaces of the car as the turntable is rotated. Brushes are also mounted on carriages movable toward and away from the center of rotation, for scrubbing vertical surfaces of the car as the turntable turns. Tire soaking troughs for a caustic solution are provided near the entrance. Controls are employed to move the brushes in response to changes in pressure of engagement of the brushes against the surfaces as the car is turned.

3,797,060

SELF-PROPELLED MACHINE FOR CLEANING EXTERNAL SURFACES OF PIPELINES

Viktor Samsonovich Salukvadze, 5 Parkovaya, 42, kv. 53; Igor Filippovich Koshman, ulitsa Bratskaya, 23, korpus 1, kv. 176, both of Moscow, and Leonid Borisovich Doktorov, ulitsa Kraskovsky obryv, 11, Moskovskaya oblast, all of U.S.S.R.

Filed Mar. 22, 1972, Ser. No. 236,813
Int. Cl. B08b 9/02
U.S. Cl. 15—88 3 Claims



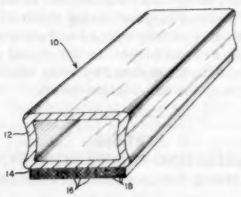
A self-propelled machine for cleaning external surfaces of pipelines in which the rotor encompassing the pipeline carries cleaning tools rotating together with the rotor and about their own axes parallel to the axis of rotation of the rotor, the tools being kinematically connected with the common drive of the machine through the drive of the rotor and, in addition, having a self-contained kinematic coupling with this drive adapted for changing the speed of rotation of the cleaning tools about their axes at a constant speed of the rotor.

3,797,061

BLACKBOARD ERASER

Lowell E. Statler, Box 115, Belleview, Ohio

Filed Feb. 2, 1972, Ser. No. 222,895
Int. Cl. B43l 21/00
U.S. Cl. 15—223 4 Claims



A blackboard eraser having a body adapted to be held in the hand, the body carrying an operative layer of leather formed with needle-like penetrations lying substantially parallel to the operative face of the layer of leather.

3,797,062

PAINT BRUSH WITH A BRUSHING ELEMENT OF A FOAMED PLASTIC

Vincent R. LoCicero, 136 Old Westford, Chelmsford, Mass., and Joseph D'Entremont, 88 Concord Rd., Billerica, Mass.

Filed June 8, 1972, Ser. No. 261,078
Int. Cl. A46b 15/00; B44d 3/28
U.S. Cl. 15—244 R 10 Claims

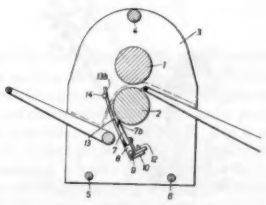
Paint brush constructions are disclosed utilizing brushing elements of foamed plastic materials. Each brush has a spring steel spade within its brushing element and extending into the ferrule. The brushing element, the spade and the handle are locked together within the ferrule with an epoxy.

3,797,063

SCRAPER HOLDER DEVICE FOR A DOUGH PROCESSING MACHINE

Karl Schrauf, Vorarlberg, Austria, assignor to Seewer AG Maschinenfabrik, Burgdorf, Switzerland

Filed Nov. 2, 1972, Ser. No. 303,036
Claims priority, application Germany, Nov. 6, 1971, 7141948[U]
Int. Cl. A21c 3/02
U.S. Cl. 15—256.51 5 Claims



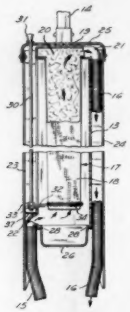
A scraper holder device for use with a dough processing machine having a pair of rollers mounted at their ends in bearing housings. A scraper or stripper element having a scraper edge bears by means of such scraper edge, under the action of spring pressure, against one of the rollers, for instance the lower roller. The scraper holder device embodies a carrier or support member for the scraper element, rotatably mounted at the bearing housings about an axis parallel to the axes of the rollers and provided at least at one of its ends with a resilient bar which, after flexing or bending same, causes the scraper edge of the scraper element to contact against the roller. This resilient bar can be introduced at its free end behind a supporting element, such as a brace or support pin provided at the neighboring bearing housing.

3,797,064

FILTER BAG CLEANING MEANS

Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Oct. 20, 1972, Ser. No. 299,217
Int. Cl. A47l 5/34
U.S. Cl. 15—351 3 Claims



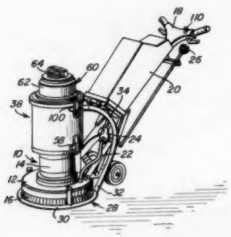
A hardbox upright vacuum cleaner having a filter bag cleaning brush within the box which is operable by a handle projecting from the box. The filter bag is enclosed within the box and is filled with a stiffening material, such as short fibers. Dirt-laden air is drawn against the outside surface of the bag so that the dirt is collected on the bag surface. The collected dirt is scraped from the bag surface by the bag cleaning brush. A removable dirt collecting box is provided beneath the bag for disposal of the dirt.

3,797,065

INTEGRATED FOAM EXTRACTING AND ROTARY SCRUBBING MACHINE

Robert R. Hughes, Lutherville, Md., assignor to Chemical Specialties Manufacturing Corp., Baltimore, Md.

Filed Oct. 29, 1971, Ser. No. 193,788
Int. Cl. A47l 9/18
U.S. Cl. 15—353 11 Claims



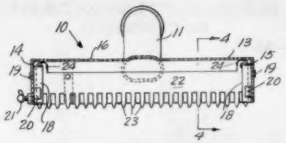
A rotary scrubber of the type including a tubular frame member supported from the body of the scrubber and extending about and closely embracing a major portion of the lower periphery of the scrubbing member with the tubular frame member provided with underside air inlet openings and supported from the body of the rotary scrubber for floating gimbaled movement. The body of the rotary scrubber includes an upwardly projecting drive motor upon whose top or upper end a wet vacuum assembly is supported and the suction inlet for the wet vacuum is communicated with the interior of the tubular member in order that suds generated during a scrubbing action may be substantially immediately vacuumed from the surface of the article being scrubbed as the scrubber is orbited over that surface.

3,797,066

SHAG RUG VACUUM HEAD

Joseph P. Zaidan, 1234 S. Broad St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 94,235, Dec. 1, 1970, abandoned. This application Sept. 5, 1972, Ser. No. 286,209
Int. Cl. A47l 9/06
U.S. Cl. 15—369 4 Claims



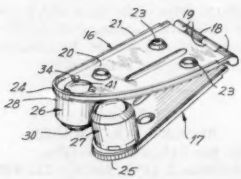
A head for a vacuum shag rug cleaner in which a comb or brush is mounted in the head on a transverse pivot to swing the comb or brush from a position upright and projecting from the bottom of the head to be effective in combing, to a position with the comb or brush swung to one side with the teeth nearly encompassed in the head. As the vacuum head is moved across a shag rug the teeth will comb the shag rug in one direction and will slide thereover when moved in the opposite direction on the return stroke so that all of the combing is in a single direction to give the surface of the rug a uniform appearance. The comb or brush is spring biased to its upright position and is moved to its non-effective position by action of movement of the comb across the rug in a direction to compress the springs therein.

3,797,067

HINGE FOR LUGGAGE AND LUGGAGE DEVICE

Ralph Rodgers, 333 Ridgeway, White Plains, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,077
Int. Cl. B60b 33/08; E05d 11/00
U.S. Cl. 16—137 2 Claims



An improved luggage hinge is disclosed comprising a pair of leaves adapted to be secured to the halves of a piece of luggage or like apparatus, the hinge being characterized by an anti-friction roller element depending from each hinge leaf, the roller elements being offset with respect to the folding axis of the hinge. A piece of luggage having a pair of such hinges appended thereto may be fully opened without interference of the roller elements of the hinges. In the closed position, the luggage may be readily transported by being translated along a horizontal surface on the anti-friction rollers.

3,797,068

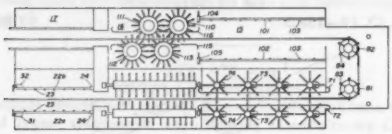
FOWL AGITATING AND WETTING SYSTEM

Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.

Filed Apr. 6, 1972, Ser. No. 241,773
Int. Cl. A22b 3/08
U.S. Cl. 17—11 11 Claims

The specification discloses a fowl agitating and wetting system including a pair of generally horizontally disposed wetting drums rotatably mounted on opposite sides of a path defined within a housing for passage of fowl therethrough.

Each drum is hollow and rotatably connected to a source of hot fluid which is delivered to the interior of the drum. A plurality of flexible agitating fingers extend from the surface of each drum. Some of the fingers are solid and some are hollow and in communication with the fluid within the drum. The hollow fingers include transverse ridges having slits through the



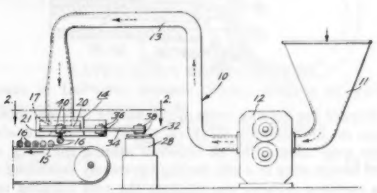
surface thereof which are closed when the finger is straight and open when the finger is bent. When the drums are rotated about their axes the fingers strike the carcasses of fowl transported therebetween so that the feathers are pulled away from the body and, at the same time, the bent hollow fingers dispense scalding fluid onto the skin of the fowl to efficiently loosen the feathers.

3,797,069

APPARATUS FOR EXTRUDING SPHERICALLY-SHAPED FOOD PRODUCTS

Wolf A. Von Lersner, and Harry H. Singer, both of Cherry Hill, N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Jan. 19, 1972, Ser. No. 218,929
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **7 Claims**



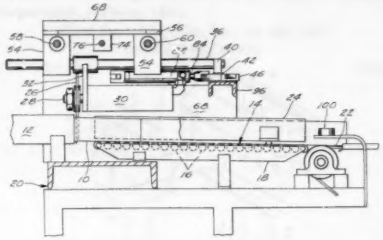
Spherically shaped food products such as meatballs, dumplings, and the like are extruded onto a moving conveyor from horizontally elongated extrusion apparatus which overlies and extends transversely of the conveyor. The apparatus comprises a chamber for containing an extrudable quantity of the food product, a pair of superimposed apertured plates mounted in the bottom of the chamber for reciprocation lengthwise of the chamber, and means for reciprocating the plates. In one embodiment, the apertures in the upper plate are circular, the apertures in the lower plate are oblate, and the apertures are arranged with respect to one another so that during each cycle the apertures in the upper plate register twice with the apertures in the lower plate. As a result, extrusion is substantially continuous and pressure fluctuations in the chamber are avoided to effect greater control over the shape of the product. In another embodiment, the apertures in the plates are circular, and the apertures register with one another only once each cycle. In this embodiment, the plates are reciprocated by means of cams which control the acceleration of the plates and hence the positions of the apertures during extrusion to control the shape of the extruded products.

3,797,070

METHOD AND APPARATUS FOR SEGMENTING EXTRUDED PRODUCT

Ernest Bonami, Western Springs, and Ogden A. Clemens, Chicago, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed May 1, 1972, Ser. No. 249,160
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **16 Claims**



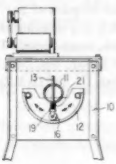
Extruded product is uniformly segmented by severing with a rotating knife blade which is moved in transverse reciprocating strokes across the stream of product while simultaneously moved longitudinally in the direction of extrusion and wherein the direction of rotation of the knife blade is reversed for each transverse stroke.

3,797,071

SHRIMP PEELING WHEEL SUPPORT ALIGNMENT LOCKING DEVICE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Sept. 25, 1972, Ser. No. 292,113
Int. Cl. A22c *29/00*
U.S. Cl. 17—73 **5 Claims**



The present disclosure is directed to maintaining horizontal alignment of peeling and cleaning rolls in a shrimp peeler and cleaner by restricting rotary movement of the posts without inhibiting up and down movement of adjacent posts at the base of which are journalled the peeling rolls. This is accomplished by molding flat walled projections at the base of the posts over which are received a locking member having a plurality of openings therethrough the walls of which are complemental to the flat walls of the projections in one direction and which are slightly greater in the other direction to permit relative vertical movement between adjacent posts.

3,797,072

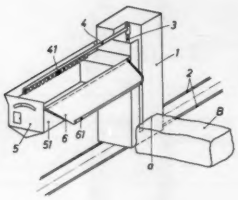
FIBER-MIXING DEVICE

Georg Goldammer, Friedrichshofen, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed June 16, 1972, Ser. No. 263,545
Claims priority, application Germany, June 19, 1971, 2130497
Int. Cl. D01g *9/00*
U.S. Cl. 19—81 **1 Claim**

A carriage includes an upright post to which one end of a horizontal arm is attached for sliding along the post and swing-

ing through a 90° arc about such post. The arm carries a row of opposed claws and normally extends perpendicular to the carriage track to lift a layer of fiber from a bale disposed beside the track. The arm is then lifted to the post top portion, swung 90 degrees, and the fiber is deposited into an elongated container mounted in cantilever fashion from the carriage. Such container has a wing along one side pivotable between a lower position to catch any fiber which may fall from the fiber



layer as the arm is swung over it toward the container, and an upper position to dump the fallen fiber into the container. A return bent wing margin catches fiber at the free wing edge. In another form of the device, fiber may be stripped from a bale bottom into a container beneath the bale by toothed stripping rollers. Such container has a wing on each of two opposite container sides, such wings flaring upwardly and outwardly to confine fibers and direct them into the container.

3,797,073

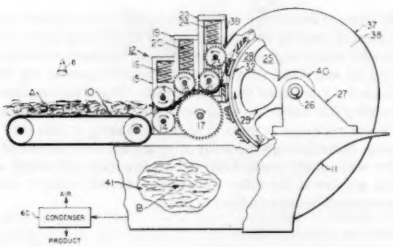
CONVERSION METHOD FOR TEXTILE FILAMENTS

Hugh J. Fairfield, Galt, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada

Division of Ser. No. 874,589, Nov. 6, 1969, Pat. No. 3,676,991, which is a continuation-in-part of Ser. No. 751,272, Aug. 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 597,263, Nov. 28, 1966, abandoned. This application May 1, 1972, Ser. No. 249,708

Int. Cl. D01b *9/00*

U.S. Cl. 19—83 **7 Claims**



A method of converting a mass of textile filaments in the form of textile material waste, tangled thread waste or cold-drawable continuous filaments of a synthetic polymer to a useful product by forwarding the mass at a low speed under a restrained condition while withdrawing the mass at a high speed to separate, randomly stretch, break and cool the filaments. The resulting discontinuous filaments are then collected.

3,797,074

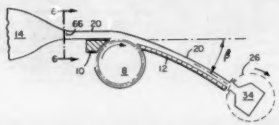
AIR-LAYING PROCESS FOR FORMING A WEB OF TEXTILE FIBERS

Dimitri P. Zafiroglu, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 241,924, April 7, 1972, and Ser. No. 135,735, April 20, 1971, said Ser. No. 241,924, is a continuation-in-part of Ser. No. 135,734, April 20, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,757

Int. Cl. D01g *25/00*

U.S. Cl. 19—156.3 **9 Claims**



A process is disclosed for high speed production of uniform webs by air-laydown of textile fibers. A feed batt of staple fibers is fed to a toothed disperser roll that projects the fibers at high velocity and low angle into an airstream of high uniform velocity and low turbulence to form a thin fiber stream from which the fibers are subsequently separated in the form of a web. The webs are suitable for producing high quality nonwoven fabrics by known fiber-interlocking or bonding treatments.

3,797,075

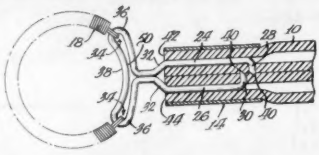
LANYARD CONSTRUCTION

Suren M. Seron, 254 Republic Ave., Joliet, Ill.

Filed Oct. 19, 1972, Ser. No. 299,109

Int. Cl. A44b *21/00*; **A45f** *5/00*

U.S. Cl. 24—73 R **4 Claims**



A lanyard for holding instruments having external annular grooves as, for example, duck calls. The lanyard includes a flexible loop adapted to be received around the neck of a wearer terminating in a clip having oppositely extending ears and a concave portion intermediate the ears adapted to be received in the annular groove. A spring interconnects the ears and with the concave portion defines a resilient loop of closed configuration which is sized to expand to be passed about the instrument for snug reception in the annular groove.

3,797,076

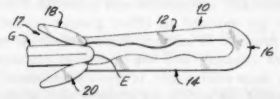
SPRING CLIP FOR FOLDED GARMENTS AND THE LIKE

Theodore Watkin, Stamford, Conn., assignor to Theodore Watkin, Stamford, Conn.; Maurice Friedman and Alfred S. Friedman, both of Woodmere, N.Y.

Continuation-in-part of Ser. No. 53,409, July 9, 1970. This application July 1, 1971, Ser. No. 158,771

Int. Cl. A44b *21/00*

U.S. Cl. 24—255 GP **13 Claims**



A spring clip is provided which is adapted to be placed over the edge of a folded article of wearing apparel in order to

retain the same in folded condition. The clip includes a pair of elongated co-extensive arms which are joined by a spring yoke to form an internal chamber in the clip. The clip has an open mouth defined by a pair of lips, with each lip of the mouth being carried by one of the arms. The lips extend transversely beyond the width of the arms. The clip may be thrust directly against the edge of an article, whereupon the lips of its mouth cam the arms open and the article's edge passes into the clip's chamber. The clip is also adapted for automatic mechanical feeding by an appropriate apparatus onto such folded wearing apparel.

3,797,077

METAL CLAMP BAND

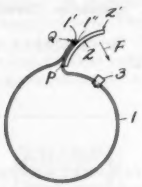
Kunihide Omori, Kuwana, and Hiromi Nagayoshi, Chino, both of Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Filed Oct. 24, 1972, Ser. No. 300,391

Claims priority, application Japan, Oct. 27, 1971, 46-85728

Int. Cl. B65d *63/02*

U.S. Cl. 24—273 **2 Claims**



Clamp band for hose, dust cover of universal joint and the like provided with a lever secured thereto to exert a powerful tightening force through a lever-action so that said band is securely locked against expansion. Collar means may maintain the locked condition.

3,797,078

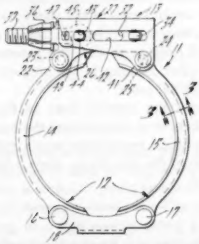
LATCH AND V BAND COUPLER

Thomas A. LaPointe, Jerome, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Sept. 1, 1972, Ser. No. 285,640

Int. Cl. B65d *63/06*; **F16l** *17/06*

U.S. Cl. 24—279 **19 Claims**



A latch usable as a closing and/or opening mechanism and shown in conjunction with a coupler having segments drawn together to connect V band flanges. In a first embodiment, the latch comprises telescoping inverted U-shaped sections pivoted to the segments at their outer ends. One section carries a bolt which passes through the end of the other section so that tightening of a nut will create tension in the bolt as the sections are drawn together. Guide slots in each section receive a cross pin carried by the other section so that no bending loads are transmitted to the coupler. A safety feature is provided in the form of rupturable portions of one latch section, the cross pin which ruptures these portions remaining captive to prevent complete opening of the coupler. In a second embodiment, the latch sections are so constructed that the bolt is placed in compression instead of tension when the latch sections are drawn together.

3,797,079

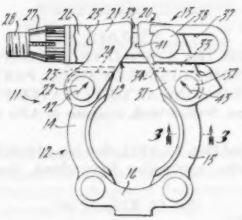
LATCH AND V BAND COUPLER

Larry R. Nixon, Michigan Center, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Sept. 11, 1972, Ser. No. 287,765

Int. Cl. B65d *63/02*

U.S. Cl. 24—285 **7 Claims**



A "V" band coupler having arcuate segments pivoted to a bottom hinge with a latch mechanism connecting the upper segment ends. The latch mechanism comprises two sections each having a web and a pair of flanges pivoted to the upper ends of the coupler segments. The head of a bolt is pivoted to one latch section and extends through the web of the other, a nut on the bolt drawing the latch sections together when tightened. Bridges on the latch sections initially engage the segments so as to create angular closing forces thereon. However, the latch sections have facing edges which contact above the bolt centerline, changing the pulling angle on the segments until it is parallel to the bolt axis. Any overtorque is taken up in the latch, protecting the segments.

3,797,080

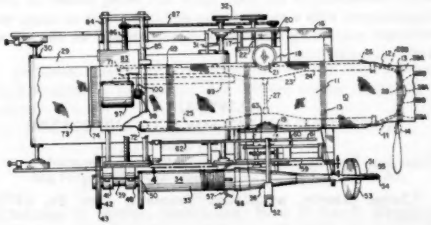
APPARATUS AND METHOD FOR SEPARATING FABRIC SECTIONS

Murray L. Rockman, Plainview, and Andrew P. Cecere, Valley Stream, both of N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,050

Int. Cl. D04b *19/00*

U.S. Cl. 28—17 **10 Claims**



The invention relates to apparatus for separating connected-together sections of tubular knitted fabric, such as sweater bodies, for example. The apparatus includes a spreading frame, which engages the tubular fabric internally and arranges it in flat form. The tubular fabric is advanced by belts engaging the internal side edges of the frame. As the fabric sections are conveyed along the spreader frame, a draw thread

or connecting thread is partially withdrawn and engaged by a rotating mandrel which serves forcibly to withdraw the connecting thread from the moving fabric, thus substantially separating a pair of adjacent fabric sections. The construction of this mandrel, to provide for high production, semi-automatic operation, is one of the features of the invention.

After withdrawal of the connecting thread, adjacent fabric sections are connected together only by a "cord" of yarns, and a novel and improved arrangement is provided for severing this yarn cord on an automatic, high-speed basis. A new cutting means includes automatically fluctuated fingers which engage the yarn cord and carry it to a high-speed cutter.

An additional feature of the invention is the method by which the successive fabric sections are handled and conveyed to assure proper location of the yarn cord for the automatic cutting operation.

3,797,081

MACHINE FOR THE AUTOMATIC HIGH-SPEED, HIGH PRECISION MACHINING OF SMALL PARTS, EVEN THOSE HAVING A COMPLICATED FORM

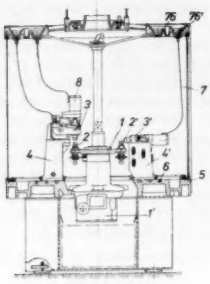
Ugo Buzzi, Agno, Switzerland, assignor to Albe S.A., Lugano, Switzerland

Filed Dec. 22, 1971, Ser. No. 210,808

Claims priority, application Switzerland, Sept. 30, 1971, 14281/71

Int. Cl. B23p *23/00*

U.S. Cl. 29—38 C **2 Claims**



A machine for automatic, high-speed, high precision machining of small parts comprising a piece holding turntable having an intermittent rotary movement for transporting each piece from one work station to the next and a plurality of interchangeable work units having at least one drive motor to advance the tool and at least one motor for the rotation of the work movement of the tool, each unit being placed in correspondence with a work station and being able to carry out different machining operations simultaneously as the pieces arrive at the station.

3,797,082

SUPPORTING ROLLER FOR BELT AND ROLLER CONVEYORS

Tons Jean Brunes, Attemosevej 8, 2840 Holte, Denmark

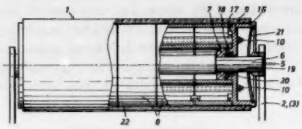
Filed June 23, 1972, Ser. No. 265,702

Claims priority, application Denmark, June 29, 1971, 3198/71

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 R **3 Claims**

A supporting roller for belt and roller conveyors which comprises a cylindrical body mounted on a shaft having smooth running bearings which are arranged at each end of the shaft and are placed against a shoulder or similar stop arrangement. The supporting roller includes a plurality of substantially identical cylinder elements of plastic or similar material, and two uniform end discs with a bearing back stop and with a mantle of rubber or rubber-like material covering



the cylinder elements. These cylinder elements and the end discs are held together by clamping devices.

3,797,083

SHEET METAL CAGE PRODUCTION

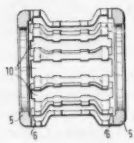
Georg Schaeffler, and Gerhard Sakowski, both of Herzogenaurach, Germany, assignors to Industriewerk Schaeffler OHG, Herzogenaurach, Germany

Filed Sept. 15, 1972, Ser. No. 289,303

Claims priority, application Germany, Sept. 22, 1971, 2147170

Int. Cl. B21d *53/12*

U.S. Cl. 29—148.4 C **3 Claims**



A novel process for the production of sheet metal cages for cylindrical rollers comprising two end rings shaped as radially directed flanges and cross-bars connecting the end rings having several axis parallel sections at different distances from the cage axis comprising

a. shaping without cutting a sheet metal strip having a uniform thickness over its entire area to provide two lateral areas having a greater thickness than the central region,

b. shaping the central area of the sheet metal strip according to the final cross-bars and in the two lateral areas to form radially directed end rings such that the greater thickness of the lateral areas lie after shaping in the area of the end rings and the adjacent cross-bar ends,

c. punching out the central area to form the cross-bars forming the pockets to accommodate the rollers and

d. bending the sheet metal strip into a cylindrical and joing the abutting ends of the end rings, steps b and c can be in any desired sequence.

3,797,084

METHOD OF MAKING A FINE DISPERSION ALUMINUM BASE BEARING

Robert J. Fedor, Westlake, Ohio, and Walter E. Smith, Hingham, Mass., assignors to Gould, Inc., Chicago, Ill.

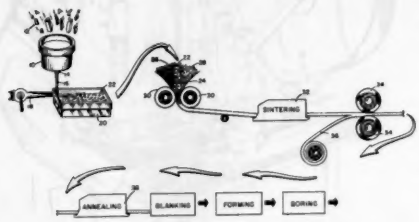
Division of Ser. No. 98,233, Dec. 15, 1970, abandoned, and a continuation-in-part of Ser. No. 704,678, Feb. 12, 1968, abandoned. This application Dec. 18, 1972, Ser. No. 315,819

Int. Cl. B21d *53/10;* **B23p** *11/00*

U.S. Cl. 29—149.5 PM **11 Claims**

A mixture of metals composed predominantly of aluminum and the balance bearing phase materials are heated to a mol-

ten state, ejected through an orifice and atomized by impinging a stream of cold water against the molten metal to effect a rapid drop in temperature as well as solidification. A layer of the resulting pre-alloyed particles are roll compacted simultaneously with a sacrificial surface layer and a bottom bonding



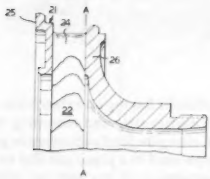
layer, both being composed of aluminum base particulate materials. The bottom layer is devoid of bearing phase materials. The tri-layer strip is sintered, roll clad onto a backing member and post-annealed, blanked and formed into a bearing which is bored to remove the sacrificial layer.

3,797,085

METHOD OF REPAIRING A PART HAVING ERODED OR DAMAGED GUIDE VANES

John M. Aartman, Beaconsfield, Quebec, Canada, assignor to Air Canada, Montreal, Quebec, Canada

Filed Oct. 10, 1972, Ser. No. 295,891
Claims priority, application Canada, Aug. 22, 1972, 149934
Int. Cl. B23p *7/00*
U.S. Cl. 29—156.8 R **4 Claims**



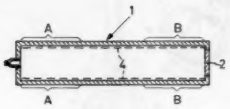
A method of repairing a guide vane part such as used in a turbine or a compressor, and having a series of peripheral openings defined by a series of guide vanes extending between two axially spaced housing portions. The method includes cutting the housing into two pieces along a radial plane extending through the junctions of the ends of the vanes with one housing portion, discarding the other housing portion, and providing a replacement housing portion with vanes and with at least some of the vanes having extensions. A series of apertures as provided in the remaining housing portion corresponding in size and position to the vane extensions, and the vane extensions are inserted into the apertures in the remaining housing portion from one side thereof to cause the free ends of the vane extensions to project through the apertures on the opposite side of the remaining housing portion. The projecting ends of the vane extensions are then secured to the remaining housing portion.

3,797,086

METHOD OF CLOSING OFF A HEAT PIPE

George Albert Apolonia Asselman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1972, Ser. No. 308,765
Claims priority, application Netherlands, Dec. 3, 1971, 7116620
Int. Cl. 165 *105;* **B21d** *53/02;* **B23p** *15/26*
U.S. Cl. 29—157.3 R **6 Claims**



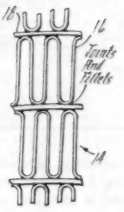
A method of closing off a heat pipe of hydrogen-permeable material subsequent to evacuation of undesirable gases, the heat pipe is filled with hydrogen, is then sealed, and finally the hydrogen is removed by diffusion through the wall of the pipe.

3,797,087

METHOD OF PREPARING OXIDATION-RESISTANT BRAZED REGENERATOR CORES

Gordon E. Allardyce, Dearborn Heights; Amedee Roy, and Claude Belleau, both of Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 18, 1972, Ser. No. 316,145
Int. Cl. B21d *53/02;* **B23p** *15/26*
U.S. Cl. 29—157.3 R **7 Claims**



Diffusion-alloying of aluminum into copper brazed joints and structures, particularly for turbine engine regenerator cores.

3,797,088

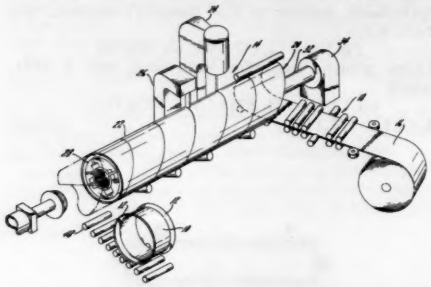
METHOD OF MANUFACTURING CYLINDRICAL BLANKS

Christian H. Stettler, Northbrook; Hans R. Luedi, Highland Park, and Albert Roze, Chicago, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Sept. 8, 1972, Ser. No. 287,561
Int. Cl. B21h *1/10;* **B21k** *1/38*
U.S. Cl. 29—159.1 **2 Claims**

The method of forming cylindrical shells such as the type used for the production of automobile wheel rims, wherein a strip of sheet metal material is spirally wound into an elongated pipe, the abutting edges of the wound strip are welded

and trimmed, and the free-end of the pipe is cut into the cylindrical shells of predetermined width as the pipe advances lon-



gitudinally with the spiral formation taking place at the opposite end.

3,797,089

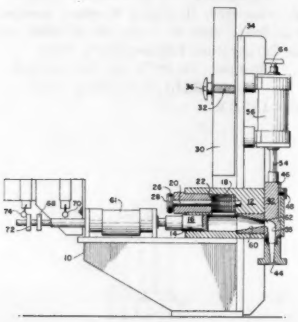
MACHINE FOR MAKING AND INJECTING LUBRICANT-IMPREGNATED WICKING MATERIAL

Martin L. Abel, 25235 Canterbury, Franklin, Mich.

Filed Oct. 17, 1972, Ser. No. 298,425

Int. Cl. B23p *19/00, 17/00*

U.S. Cl. 29—200 B **23 Claims**



A machine for making lubricant-impregnated wicking material and injecting it into the well of a bearing element. The machine includes a chamber and means for making a charge of the lubricant-impregnated wicking material and depositing it into the chamber. A piston is movable in the chamber between first and second positions, the charge of wicking material being deposited in the path of the piston when it is in the first position. Flow path means is provided between the chamber and the bearing element so that when the piston moves toward the second position the wicking material will flow along the path and into the well of the bearing element.

3,797,090

TERMINAL INSERTION APPARATUS

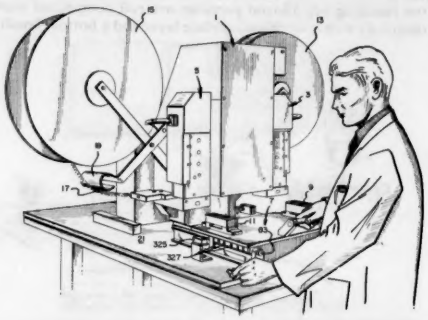
Andrew Graham Boutcher, Dauphin, and William LeRoy Busler, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1972, Ser. No. 226,893

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 B **14 Claims**

A string of side-by-side connected terminals and a housing having terminal receiving compartments are stepped toward a station at which the connection between adjacent terminals or selectively between and *n* th and an *n* th + 1 terminal is



severed, and the one or plurality of terminals severed from the string inserted by one operation into the respective housing compartment.

3,797,091

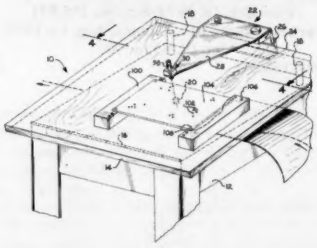
TERMINAL APPLICATOR

John H. Gavin, Lancaster, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1972, Ser. No. 253,426

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **13 Claims**



A terminal applicator having an extendable ram for severing a terminal from a carrier strip and mounting the terminal on a circuit board. An elongate feed arm extends generally parallel to the ram and is pivoted in a plane parallel to the carrier strip in response to extension of the ram so that the feed pawl sweeps back and forth across the carrier strip feed path in a shallow arc to index the lead terminal on the strip to a pick-up position.

3,797,092

DUAL IN LINE PACKAGE HANDLING TOOL

Norman S. Einarson, Burlington, Mass., assignor to Solder Removal Company, Covina, Calif.

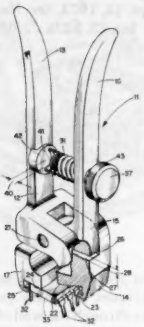
Filed Oct. 25, 1972, Ser. No. 300,769

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 H **13 Claims**

A tool for grasping and holding a dual in line electronic circuit package for insertion into a printed circuit board or connector. The tool engages the normally slightly diverging contact leads of the circuit package and bends them inwardly. The tool employs an adjustable stop to positively limit the amount of bending of the contact pins. An extraction tool is formed by

a minor modification to the insertion tool, wherein the jaws are formed with teeth which pass between the contact leads



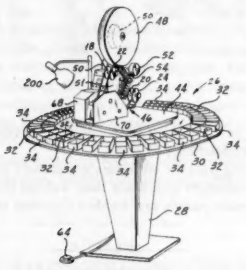
and positively engage the body of the electronic package to facilitate removal of the package from its mounting.

3,797,093

IMPROVED SEMI-AUTOMATIC COMPONENT SEQUENCING MACHINE

John G. Grafford, Dorr, and Lloyd D. Herring, Jenison, both of Mich., assignors to Rowe International Inc., Whippany, N.J.

Filed Oct. 30, 1972, Ser. No. 302,050
Int. Cl. H05k *13/04*; **B23p** *19/04*
U.S. Cl. 29—203 P **19 Claims**



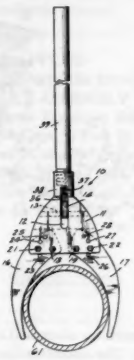
An improved semi-automatic component sequencing machine for facilitating the formation of a string of electrical components in a predetermined sequence with the leads of the components held between pairs of tapes, in which, in the course of an operator-initiated sequence, a pair of resilient centering fingers move in to engage the body of the leading one of a plurality of components supported by their leads between notched feed wheels and in which hammers drive the leads of the centered component away from the fingers and into engagement with the upper pressure sensitive tapes supported on spaced upper pressure wheels and into notches on spacer wheels associated with the upper pressure wheels and in which notched lower pressure wheels subsequently apply the lower tapes to the leads. The machine makes provision modifying its operation to change the inter-lead spacing.

3,797,094

ASSEMBLY TOOL

Cassius C. Combs, Rt. No. 2, Box 62, and Arthur D. Hulet, Box 173, both of Wisconsin Dells, Wis.

Filed Apr. 26, 1972, Ser. No. 247,777
Int. Cl. B23p *19/04*; **B21d** *39/04*
U.S. Cl. 29—237 **8 Claims**



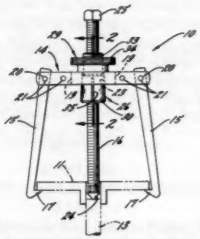
A tool for joining transite and soil pipe which utilizes a neoprene gasket in which the female member has a flange and the male member is received into the flange and gasket comprising a bifurcated handle which fits behind the flange for joining and has an arm which is attachable to the male member so as to apply pressure to join the members together. The tool may also be used for separating pipes to force them apart in response to movement of the handle.

3,797,095

BEARING PULLER

David E. Benson, 615 W. Sixth St., Belvidere, Ill.

Filed June 1, 1972, Ser. No. 258,755
Int. Cl. B23p *19/04*
U.S. Cl. 29—261 **3 Claims**



A bearing puller having a threaded rod which is normally held in a given vertical position on a crossbar by a collet having spring fingers which may be loosened by turning a nut on the upper end of the collet.

3,797,096

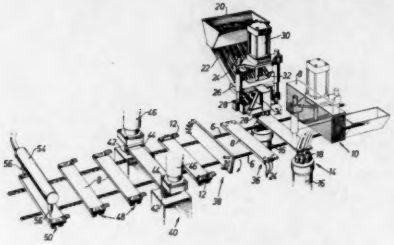
METHOD OF PROVIDING METAL MOUNTINGS OR THE LIKE ON MEMBERS OF WOOD OR SIMILAR MATERIAL

Maths S. I. Nilsson, Hestra, Sweden, assignor to Nilssons Industriemballage AG, Hestra, Sweden

Filed Nov. 24, 1971, Ser. No. 201,726
Int. Cl. B23p *19/00*
U.S. Cl. 29—429 **13 Claims**

A method of securing metal mountings to wooden members with rivets is disclosed. The wooden members are drilled to a

slightly smaller diameter than the rivets. The rivets are inserted through the holes at the conclusion of the drilling operation, and are frictionally held in place by the wooden member. The metal mountings are then mounted on the member and the assembly is passed to a rivet upsetting station.



The rivets are softened by electrical current as the upsetting pressure is applied. The specification discloses several configurations of electrodes that provide simultaneous heating and pressure. After upsetting, the rivets are sprayed with a colored powder or protective coating. The heat retained in the upset rivet is used to melt the powder and spread the coating.

3,797,097

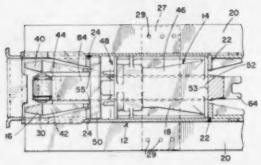
METHOD FOR REMOVING DRAFT GEAR

Bertil E. Peterson, Chicago, Ill., assignor to Cardwell Westinghouse Company, Chicago, Ill.

Division of Ser. No. 141,150, May 7, 1971, Pat. No. 3,744,116. This application July 24, 1972, Ser. No. 274,215

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **2 Claims**



A method and device for removing railroad car draft gear-yoke assemblies in which the yoke is broken or cracked, wherein the device comprises a frame including a rigid elongate base having a pair of upstanding arms, one of which is rigid with the base and the other of which is swingably mounted to move its upstanding end toward the rigid arm under the action of the hydraulic ram carried by the base. After the draft gear carrier iron, coupler, and its key or keying pin are removed, the device is lifted up against the draft gear-yoke assembly, with the rigid arm positioned against the yoke inner end and the swingable arm adjacent a block of metal disposed in the yoke outer open end adjacent the draft gear front follower. The ram is then acutated to compress the draft gear between the block and yoke inner ends so as to free it from the draft gear pocket front stops, after which the draft gear and yoke may be lowered from the draft gear pocket as a unit.

3,797,098

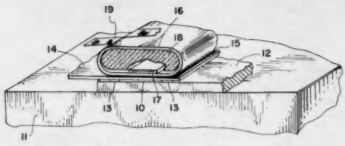
TOTALLY CONFINED EXPLOSIVE WELDING

Laurence J. Bement, Newport News, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 14, 1972, Ser. No. 289,048

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **5 Claims**



A simple means for eliminating the noise and debris of explosive welding techniques by totally enclosing and applying the explosive pressure through the wall of the enclosure.

3,797,099

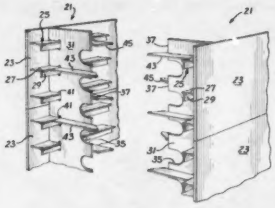
METHOD FOR FORMING A SHIP HULL SECTION

Richard Adams Myers, Rolling Hills Estates, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Jan. 4, 1972, Ser. No. 215,365

Int. Cl. B23k *31/00*

U.S. Cl. 29—471.3 **7 Claims**



A method and structure for forming a portion of a ship hull using prefabricated hull sections.

Plates having parallel stiffeners are moved relative to apertured cross-stiffeners which are then welded thereto to form a panel. Two such panels are welded together in back-to-back relation.

3,797,100

SOLDERING METHOD AND APPARATUS FOR CERAMIC CIRCUITS

Lawrence T. Browne, 1120 Coast Village Cir., Santa Barbara, Calif.

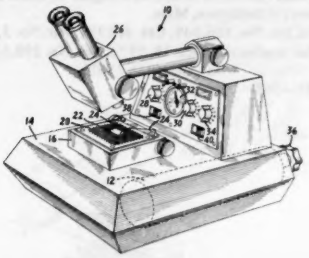
Filed Apr. 12, 1971, Ser. No. 133,315

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.1 **13 Claims**

Disclosed herein is a method and apparatus for soldering electronic components to conductor pads on a ceramic substrate, wherein the source of heat for melting the solder is applied in a localized manner to the underside of the substrate. In the apparatus, a miniature hydrogen torch is disposed adjacent the underside of the substrate, in alignment with a component to be soldered to the upperside thereof, and the flame of the torch is electronically controlled by an ignition and valving system. The ignition system comprises a heating filament, disposed adjacent the discharge orifice of the torch, for being heated to ignite a valve-released jet of hydrogen, after

which the filament is deenergized and the resultant flame is maintained for a predetermined period sufficient to effect a



satisfactory soldered connection between the component and the substrate.

3,797,101

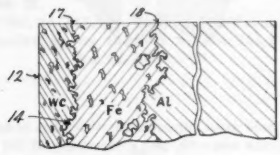
METHOD OF MAKING DIE CASTINGS HAVING MULTI-LAYER COATED SURFACES

Alfred F. Bauer, Toledo, Ohio, assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 27, 1972, Ser. No. 309,753

Int. Cl. B22d *19/08*

U.S. Cl. 29—527.3 **7 Claims**



This invention relates to a method for producing coated die castings, for example, die cast cylinders or housings for rotary or reciprocating internal combustion engines. The method is particularly directed to the production of a casting having a multiple layer coating wherein the layer exposed to the working surface of the cylinder or housing is of a material which will provide a very hard, wear resistant layer, and the underlayer, between the die casting and the wear resistant layer is of a softer, less expensive, highly adherent and physically strong material.

3,797,102

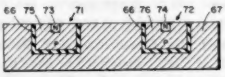
METHOD OF MAKING SEMICONDUCTOR DEVICES

Tommie R. Huffman, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 440,421, March 17, 1965, Pat. No. 3,393,349, which is a division of Ser. No. 363,802, April 30, 1964, abandoned. This application Jan. 7, 1966, Ser. No. 519,227

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **8 Claims**



A monolithic integrated circuit structure is fabricated having a plurality of discrete single crystal semiconductor islands supported by and intimately bonded to a common substrate, including an insulating material to isolate the monocrystalline islands. The method of fabrication includes the steps of removing semiconductor material from selected areas of one side of a monocrystalline semiconductor body, replacing the removed material with an insulating layer and a support member, and then removing single crystal material from the opposite side of the wafer to expose portions of said insulating layer thereby providing monocrystalline islands for the fabrication therein of semiconductor devices.

3,797,103

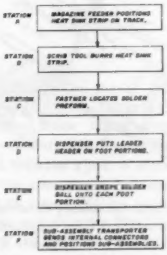
MACHINE AND PROCESS FOR SEMICONDUCTOR DEVICE ASSEMBLY

Richard J. Desmond, North Syracuse; Edward J. Fronczek, Auburn, and John J. McCarthy, Port Byron, all of N.Y., assignors to General Elecric Company, Syracuse, N.Y.

Division of Ser. No. 34,042, May 4, 1970, Pat. No. 3,669,478. This application Nov. 10, 1971, Ser. No. 197,535

Int. Cl. B01j *17/00*

U.S. Cl. 29—583 **3 Claims**


STATION A
MAGAZINE FEEDER POSITIONS HEAT SINK STRIP ON TRACK.
STATION B
SCRIB TOOL BURRS HEAT SINK STRIP.
STATION C
FASTNER LOCATES SOLDER PREFORM.
STATION D
DISPENSER PUTS LEADED HEADER ON FOOT PORTIONS.
STATION E
DISPENSER DROPS SOLDER BALL ONTO EACH FOOT PORTION.
STATION F
SUB-ASSEMBLY TRANSPORTER DEMOS INTERNAL CONNECTORS AND POSITIONS SUB-ASSEMBLIES.

A machine and process are disclosed for assembling a plurality of semiconductor devices having heat sinks initially united in a common strip. A track is provided for allowing a heat sink strip to be sequentially transported through a plurality of assembly stations. A magazine is provided for dispensing heat sink strips to the track. The strip is advanced by fingers engaging regularly recurring apertures in the strip. The heat sink strip is first burred and then a solder preform is stamped onto the strip at spaced intervals overlying the burrs. Lead carrying headers are fed into association with spaced foot portions of the strip. A dispenser feeds a solder ball to a window in each header. A forming and pick up mechanism positions sub-assemblies including semiconductive elements and internal connectors on the heat sink strip overlying the solder preforms.

3,797,104

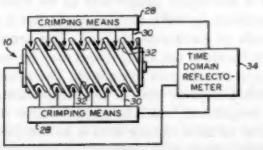
FLEXIBLE COAXIAL CABLE AND METHOD OF MAKING SAME

William T. Pote, 41 Moraine Rd., Morris Plains, N.J.

Filed July 13, 1972, Ser. No. 271,607

Int. Cl. G05f *1/00*

U.S. Cl. 29—593 **16 Claims**



A flexible coaxial cable having an inner conductor to which a dielectric is secured such as by fusion and a convoluted outer conductor formed from a strip helically wound conductor secured, such as by soldering, to a corrugated conductive

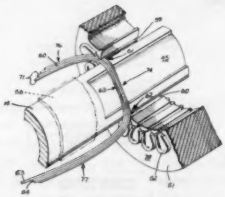
member, with the helically wound portion being secured to the peaks of the corrugations. The outer conductor is locked to the dielectric by crimping solely in the valleys between the helically wound convolutions. The crimping is accomplished under controlled conditions to provide a predetermined characteristic impedance, such as 50 ohms, for the coaxial cable by means of the mechanical crimping. The crimped cable is temperature cycled in a temperature chamber so as to provide thermal stability for the coaxial cable.

3,797,105

METHOD AND APPARATUS FOR DEVELOPING ELECTRICAL COILS

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company, Ft. Wayne, Ind.

Filed Mar. 24, 1972, Ser. No. 237,829
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **7 Claims**



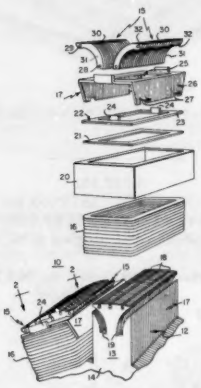
Method and apparatus for axially developing electrical coils in selected slots of a stator core for a dynamoelectric machine. In the exemplified approach, two strands of wire are wound in hand, i.e., wound simultaneously, to generate one or more electrical coils having two or more turns each. Coils are transferred axially into slots of stator core firmly supported in a predetermined position relative to the coil generation means. Transfer and insertion is done in known manner. Indexing means may also be provided and used to either re-orient the stator core relative to the coil placing means for receipt of other coils or core may be positioned and oriented in a predetermined position relative to a second winding and/or placing means spaced from the first coil placing means. Two or more strands of wire are substantially simultaneously dispensed by flyer means moving in a substantially constant and fixed path about arbor or coil form means that establish a predetermined desired shape for the turns of each coil. As the flyer means moves, the multiple strands of wire tend to twist one upon another. However, along at least two predetermined portions of each coil being developed, the wire strands are prevented from twisting or crossing one upon another. Arbor means have predetermined "no twist" locales adjacent which are located those portions of the coils that are to enter restricted core slot entrances. In the case of generally arcuate divider blades or plates, a recessed or relieved area is provided along a preselected central region of at least selected ones of the divider blades to encourage and accommodate twisting of wire strands while being placed against the divider blades. Recess preferably is of a depth at least equal to twice the diameter of a maximum strand size to be flyer wound. The recess or undercut in each divider blade has a divider blade no-twist locale at each side thereof. The arcuate length of each no twist locale is not critical and may be made to be, for example, about one quarter of an inch. The axial extent of the recessed surface is preferably at least approximately as great as the axial length, i.e., stack height of a core with which the apparatus is to be used. As the wire is pulled across a no-twist locale, relatively high wire tension, i.e., relatively high pressure between the wire and arbor means rather than simple strand tension, occurs and is believed to contribute to the advantageous results. Since the wire strands preferably do not contact undercut regions of the arbor means, no pressure will be exerted therebetween.

3,797,106

METHOD OF MAKING A SALIENT POLE ROTOR CONSTRUCTION WITH REMOVABLE POLE TIPS

Charles Albert Costello, Erie, Pa., assignor to General Electric Company, Wilmington, Mass.

Division of Ser. No. 186,349, Oct. 4, 1971, Pat. No. 3,728,566.
This application Oct. 18, 1972, Ser. No. 298,621
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **2 Claims**



A salient pole rotor construction which has removable pole tips to facilitate assembly and disassembly of the rotor. The removable pole tip is so constructed that centrifugal forces produced during rotation act to seat the pole tip more firmly to the rotor pole. The rotor pole bodies have an arcuate pole tip retaining slot extending along the length of the pole body. The removable pole tip consists of the pole tip portion having a surface which mates with that of the pole surface and an arcuate retaining stem which has the same curvature as the retaining slot in the pole shoe. The rotor is assembled by positioning a pre-formed field coil over the rotor core and then attaching the salient pole tips by inserting the arcuate stem in the retaining slot to lock the coil in place and retain it in position. By virtue of the arcuate configuration, the centrifugal forces generated by rotation force the arcuate stem of the pole tips firmly against the side of the slots thereby utilizing the centrifugal force to seat the salient pole tips firmly. By virtue of this construction, pre-formed field coils may be used simplifying the assembly of the rotor. Assembly time is reduced, while at the same time, scrap and rework losses are cut down producing highly desirable cost savings.

3,797,107

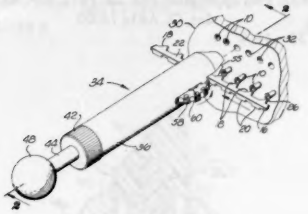
BACKPLANE MANUFACTURE

John W. Anhalt, La Crescenta, and David S. Goodman, Orange, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,812
Int. Cl. H05k *13/04*; **B23q** *7/10*
U.S. Cl. 29—625 **5 Claims**

A method is described for manufacturing a backplane in which plugs are inserted into apertures in the backplane to

mask the surfaces of the apertures. A nonconductive coating is formed on the backplane while the plugs are positioned in



such apertures. Thereafter, electrical contacts are inserted into the apertures to remove the plugs therefrom.

3,797,108

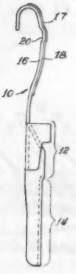
METHOD FOR FABRICATING SELECTIVELY PLATED ELECTRICAL CONTACTS

Robert M. Healy, Warrenville, and Ralph J. Hovey, Glen Ellyn, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 815,609, April 14, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,854

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 C **1 Claim**



A method and apparatus for making electrical contact members from a continuous sheet or tape of electrically conductive material, the members being provided with precisely located plated wear areas adapted to establish electrical connection with a mating contact. Apparatus is provided for indexing the tape with longitudinally spaced apart locating pilots, and for coating the tape with a resist material in a manner to define precisely located non-coated areas thereon, the non-coated areas corresponding to the wear areas of the contacts. Thereafter, the tape is subject to a selective plating process which plates only the non-coated wear areas with a layer of noble metal. Cleaning apparatus is provided for removing the resist material from the tape, and apparatus is provided for punching and forming the contacts from the tape, the apparatus being operative to precisely fixed the plated wear areas of the contacts with respect to the indexing pilots. In this manner, each of the contacts formed is provided with a precisely located plated wear area.

3,797,109

ELECTRIC SHAVER WITH ROCKABLE SHAVING HEAD

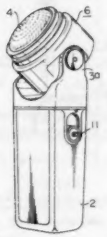
Norio Yamada; Yoji Iguchi; Yoshimasa Tanaka; Tatsuke Oho, and Yoritaka Ikejima, all of Hikone, Japan, assignors to Matsushita Electric Works Ltd., Osaka, Japan

Filed Jan. 30, 1973, Ser. No. 327,935

Claims priority, application Japan, Feb. 1, 1972, 47/11947

Int. Cl. B26b *19/14*

U.S. Cl. 30—43.1 **5 Claims**



A battery powered electric shaver with rockable shaving head which including shaving cutter blades and motor for driving movable cutter blade. The shaving head is separately provided from shaver body which including the battery and is rockably supported between a pair of arms extending from the shaver body. Electric connection between the head and the body is performed by a metal fitting exposed out of the head adjacent supporting axis for the head as connected to the motor and a conductive member disposed in the pair of arms as slidably butted at a resilient end against the metal fitting of the head and connected at the other end to the battery, so that the connection can be retained throughout rocking movement of the head. Between the metal fitting and the conductive member, there may be provided a clicking means to lock the head at predetermined rocked angles. Provision of a discontinuity in the metal fitting for interrupting butting connection of the conductive member at a predetermined angular position of the head allows normal ON-OFF switching means to be omitted.

3,797,110

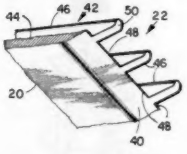
RAZOR WITH GUARDED RAZOR EDGE

Gunnar P. Michelson, 505 Sea Ranch Dr., Santa Barbara, Calif.

Filed Apr. 21, 1972, Ser. No. 246,172

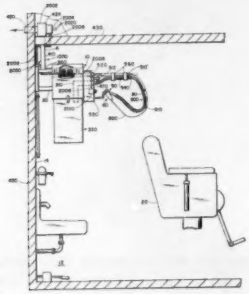
Int. Cl. B26b *21/16, 21/54*

U.S. Cl. 30—82 **9 Claims**



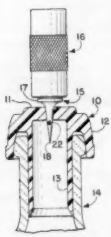
A razor has a guarded razor edge which includes a substantially flat flank and a profiled flank. The profiled flank comprises a multiplicity of alternating relatively narrow panels separated by much narrower guard ribs spaced along the razor edge. The panels converge with the flat flank to form short, spaced apart sharp cutting edges between the guard ribs. The guard ribs protrude above the plane of the panels and forward of the cutting edges, and are integral portions of the razor body.

3,797,111
MANUALLY REGULATED VACUUM ASSEMBLY FOR HAIR CLIPPER
Thomas P. Keane, Council Bluffs, Iowa
Continuation-in-part of Ser. No. 12,287, Feb. 18, 1970, Pat. No. 3,613,237. This application Oct. 14, 1971, Ser. No. 189,404
Int. Cl. B26b 19/44
U.S. Cl. 30—133 11 Claims



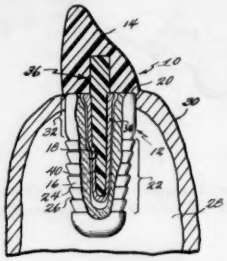
A manually regulated vacuum assembly for barber's hair clippers comprising a vacuum air-intake attachment attached to a clipper body and connected to a hair-catching device by a hose, a blower pulling air from the hair-catching device and means for manually regulating the rate of air flow through said attachment while continuing said air flow, such manual regulation being by degrees so that any one of many amounts of air flow can be selected.

3,797,112
GAS RELIEVING DEVICE FOR BOTTLES
Robert C. Paulson, 310 Valhalla Cir., Crystal Lake, Ill.
Filed June 13, 1972, Ser. No. 262,351
Int. Cl. B67b 7/24
U.S. Cl. 30—366 6 Claims



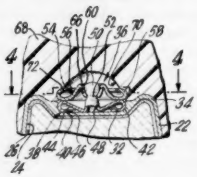
A gas relieving device for beverage bottles having the contents thereof under a gas pressure and in which the bottles are sealed by a plastic stopper or closure. The device comprises a lower lance section for piercing a plastic stopper. The lance section is threaded to receive a cap section which with the lance section provides an adjustable valve arrangement.

3,797,113
DENTAL IMPLANT
Herbert Brainin, Los Angeles, Calif., assignor to Vitredent Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 42,069, June 1, 1970, Pat. No. 3,717,932. This application Feb. 24, 1972, Ser. No. 228,843
Int. Cl. A61c 13/00
U.S. Cl. 32—10 A 7 Claims



A dental implant member formed of substantially nonporous, isotropic carbon having a textured and dentated lower portion. The implant member is provided with means for attaching an a artificial crown section thereto.

3,797,114
DETACHABLE MOUNT FOR A DENTAL CAP AND PROSTHODONTIC PROCEDURE UTILIZING THE SAME
Lawrence Wiland, 144-15 41st Ave., Flushing, N.Y.
Filed Sept. 21, 1972, Ser. No. 290,858
Int. Cl. A61c 5/08
U.S. Cl. 32—12 8 Claims

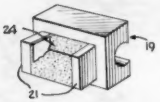


A dental cap, which may be an individual cap, or an end or intermediate cap of a bridge, is detachably secured by a fastener to a coping cemented on a prepared tooth. The fastener has one-half thereof mounted on the undersurface of the cap and the other half, through the medium of the coping, on the upper surface of the prepared tooth. A "prepared" tooth constitutes that part of a tooth which, in accordance with conventional dental practices, has had some or all of the enamel removed but which has a substantial residual bulk extending for a considerable distance above the gingival margin. A prepared tooth usually is vital, that is to say, alive, so that the present invention maintains a large part of the integrity of a tooth structure and does not tend, as has been the case with previous detachable caps, to leave only the root of a tooth which is highly susceptible to various forms of attack and stress damage and is not as inherently strong as a prepared tooth.

3,797,115
ORTHODONTIC ELEMENT

Elliott Silverman, 4829 Atlantic Ave., Ventnor, N.J., and Morton Cohen, 1201 Wrack Rd., Meadowbrook, Pa.

Filed June 7, 1972, Ser. No. 260,489
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **6 Claims**

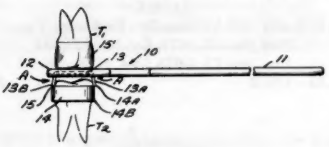


This invention relates to an orthodontic element to be applied directly to the tooth without the use of a conventional band. The elements described are constructed of metal and are of a shape particularly adapted to be affixed directly to the teeth by use of an adhesive compound.

3,797,116
DUAL POST BAND SEATER

James E. Meeks, Jr., 505 N. Seminary St., Florence, Ala.

Filed Oct. 13, 1972, Ser. No. 297,391
Int. Cl. A61c *7/00*
U.S. Cl. 32—66 **5 Claims**



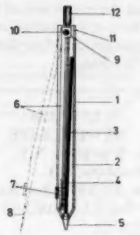
A dental tool is used for applying dental bands to the teeth of the human patient for tooth straightening purposes. An elongated member has a handle portion at one end and an operative flattened portion at the other end, the area of one side of the flattened portion is at least co-extensive with that of the area of the working surface of the tooth opposed to that for which the tool will be used. Dual post means extend from the other side of the flattened portion at substantially the same angle relative thereto and engage at opposite sides of the outer edge of the dental band. The inner edge of the band initially engages about the outer edge of the working surface of the tooth, and the one side of the flattened portion is adapted to engage with the working surface of the opposing tooth. The dual post means is adapted to guide and push the band into circumferential engagement about the side of the tooth, on biting engagement with the flattened portion, thereby seating the band about the tooth.

3,797,117
COMPASS BALLPOINT PEN

Fernando Sanz Gimenez, Juan de Urbieta St., Madrid, Spain

Filed Aug. 2, 1972, Ser. No. 277,385
Int. Cl. B43l *9/02*
U.S. Cl. 33—27 B **3 Claims**

A compass ballpoint pen combination comprising a case having curved surfaces and defining an asymmetric compartment for receiving therein a ballpoint pen cartridge. The case forms a longitudinal depression following the curved surfaces

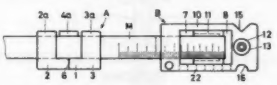


and opening towards the outside. A compass point arm is pivotally housed and received in the depression.

3,797,118
DOUBLE-TYPE CONTINUOUS CURVE DRAWING TOOL

Kazuko Yamamoto, No. 5-4, 3-chome, Gohongi Meguro-ku, Tokyo, Japan

Filed June 15, 1972, Ser. No. 262,986
Int. Cl. B43l *9/04*
U.S. Cl. 33—27 C **10 Claims**

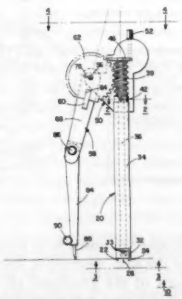


A double-type continuous curve drawing tool comprising two parts, i.e., a supporter A capable of clipping a tape measure at any given point and also having a pivotal pin serving as the center for swinging movement and a fixer B provided on the end of said measure and having a writing tool inserting portion, characterized by said fixer B comprising a rectangular-shaped plate frame fitted with an elastic piece 9 for clipping the measure at the aft end of the back of a plate frame 10 and having in the central portion of the fixer, a right-angled triangular structure 11 with its two sides elevated and with its hypotenuse lying as the base between the right- and left-hand measure passing holes 7 and 8, said fixer B further having a writing tool inserting portion 13 with a taper hole 12 provided at a position which agrees with the central axis of the tape measure M passed through said holes near their fore end.

3,797,119
DRAWING INSTRUMENT

Ronald McDow, 10100 La Placita Dr., Rancho Cordova, Calif.

Filed May 24, 1973, Ser. No. 363,585
Int. Cl. B43l *13/24*; **G01b** *3/16*
U.S. Cl. 33—27 M **14 Claims**



A drawing compass-like instrument for producing spiral-like curves in which a worm is positioned on one leg of the in-

strument and a worm gear is positioned on the other leg of the instrument, the worm gear meshing with the worm. The worm is prevented from turning as the instrument is swung, whereby the gear swings around the major axis of the worm, causing the gear and the leg to which it is attached to increase or decrease the radius of the instrument as a function of the angle through which the instrument is swung.

3,797,120
SEWING TAPE

Zachary Paul Byne, Brooklyn, N.Y., assignor to Emerson Labeltape Corp., Brooklyn, N.Y.

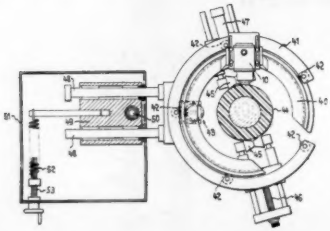
Filed Apr. 17, 1972, Ser. No. 244,562
Int. Cl. G01b *3/10*
U.S. Cl. 33—137 R **2 Claims**

A sewing tape especially adapted to provide a measured sewing guide line when using a sewing machine. The tape is in the form of a strip provided with cuts or serrations for separating the tape into ribbons of predetermined thickness and has suitable guide lines printed thereon some of which coincide with the cuts or serrations.

3,797,121
DEVICE FOR MEASURING THE POSITION OF A CONDUCTOR IN A CABLE

Mathias Brunner, Magglingen/be, Switzerland, assignor to Zumbach Electronic Automatic, Berne, Switzerland

Filed Apr. 21, 1970, Ser. No. 30,544
Int. Cl. G01b *5/10*
U.S. Cl. 33—174 Q **7 Claims**

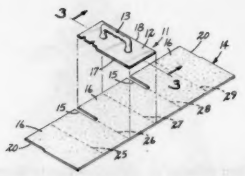


A device for measuring the position of a conductor in a cable, insulated wire or the like, wherein at least one measuring head for measurement of the thickness of the insulation is turned to different measuring positions round the cable or wire, wherein said measuring head is mounted on a split ring rotatably mounted, the gap of said ring allowing insertion of the cable or wire into its measuring position in the axis of the ring at any time during production of the cable or wire.

3,797,122
SHINGLE CUTTING GUIDE

Gerald P. Smith, Rt. No. 5, Bemidji, Minn.

Filed Feb. 4, 1971, Ser. No. 112,702
Int. Cl. G11b *5/16*
U.S. Cl. 33—174 G **7 Claims**

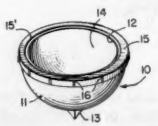


The disclosure is directed to a roofer's cutting guide for use in trimming tab asphalt shingles to a predetermined length. The guide consists of a plate of predetermine width and having a pair of parallel edges for guiding a shingle cutting tool. One of the edges is partially cut away to form a third parallel edge which also conforms in part to the shape of a slot lying between and defining the shingle tabs. The width of the plate is chosen so that upon alignment of the third edge with the shingle slot, the shingle can be trimmed lengthwise either at the slot or along a transverse line lying mid-way between two slots.

3,797,123
PORTABLE PRECISION GOLF BALL SPHERICITY GAUGE

Thomas E. Fraley, 993 Nicklaus Dr., Rockledge, Fla.

Filed Jan. 22, 1973, Ser. No. 325,341
Int. Cl. G01b *3/14, 5/22*
U.S. Cl. 33—178 B **5 Claims**



A portable golf ball sphericity gauge comprising a hemispherical cup defining a hemispherical cavity corresponding to the shape of a hemispherical portion of a normally spherical standard size golf ball and being of slightly larger diameter than the diameter of the standard size golf ball.

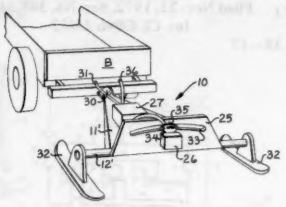
3,797,124
GROUND PROFILE READER

Gene B. Easterling; Russell D. Page, both of Decatur; Rolland D. Scholl, Peoria, and William R. Tillman, Monticello, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 21, 1972, Ser. No. 246,401
Int. Cl. G01c *7/04*
U.S. Cl. 33—331 **6 Claims**

An elongated beam having spaced apart ground engaging members supporting it on a monitored surface includes transport system for moving it normal to its longitudinal axis whereby a level transducer centrally attached to the beam and connected by powered electrical circuits to an indicator will continuously reflect the displacement (slope) of its ground engaging members on the monitored surface normal to the path transversed by the beam. The transport system may include a device for measuring the distance traversed and the indicator

may include a strip chart recorder whereby a chart profile of the monitored surface can be obtained. Special marking devices can be operated by the circuits to physically mark or paint areas where the monitored surface is cut outside the prescribed tolerances with respect to slope.



3,797,125

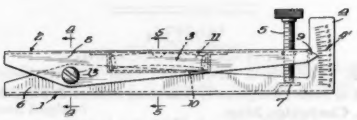
LEVELS AND LEVEL DETERMINING DEVICES

Harry G. Yetter, Colchester, Ill.

Continuation of Ser. No. 884,943, Dec. 15, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,505

Int. Cl. G01c *9/28*

U.S. Cl. 33—387 **1 Claim**



An elogated base provided with upstanding side flanges or walls throughout its length pivotally mounting thereon a substantially correspondingly formed and sized body in parallel relation thereto having a right angularly and normally vertically disposed adjusting screw threadedly engaged with and through one free end portion bearing on an adjacent portion of the base bottom, a pointer-finger on and extended from one end of the pivotal body cooperable with a calibrated upstanding panel on the corresponding end portion of the base, and a spirit level vial fixedly seated on and disposed longitudinally of said body.

3,797,126

DRUM DRYER

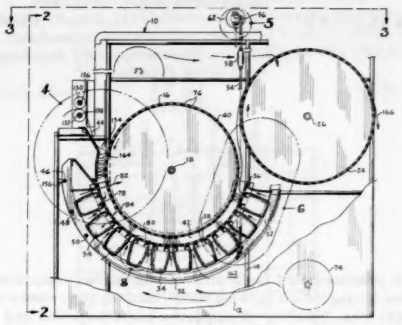
Ralph C. Parkes, Hancock & Lehigh Ave., Philadelphia, Pa.

Filed Aug. 25, 1972, Ser. No. 283,812

Int. Cl. F26b *11/02*

U.S. Cl. 34—114 **14 Claims**

A drum dryer incorporating a rotary drum which is peripherally perforated to receive heated air therethrough. A plurality of air nozzles are defined between a plurality of transverse return air ducts and are positioned to direct air toward the drum. The transverse air ducts are carried upon an arcuate arm which is peripherally positioned relative to the rotary drum. The return air ducts and the rotary drum define an arcuate annular space to receive textile materials therein for drying and stitch adjustment purposes. The arcuate arm is pivotally affixed at one end thereof to the dryer machine frame and has its other end vibrated for textile treatment purposes during the drying operation. The air ducts are provided with dampers which function to closely control the volume of air passing therethrough, so that the quantities of air passing through the textile materials and into the rotary drum can be regulated.



3,797,127

CIRCUITOUS PASSAGEWAY FOR DRYING COPY SHEETS

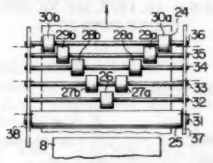
Hiroshi Yamada, Ichikawa, and Hiroshi Hirose, Tokyo, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed Sept. 21, 1972, Ser. No. 290,800

Claims priority, application Japan, Sept. 22, 1971, 46-86426; Dec. 10, 1971, 46-116661

Int. Cl. G03g *5/00*

U.S. Cl. 34—123 **9 Claims**



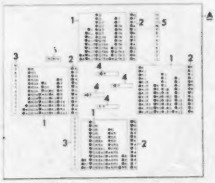
Apparatus forming a circuitous passageway in a copying device comprising a large diameter squeeze roller and a plurality of smaller diameter squeeze rollers of a smaller width pressing against the large diameter squeeze roller. Copy sheets released from the developing liquid tank are introduced one after another into this circuitous passageway to squeeze out the developing liquid from the copy sheets for drying the same and to change the direction of movement of the sheets. The small diameter squeeze rollers are arranged such that one of them or a center squeeze roller is disposed on the center peripheral line of the large diameter squeeze roller near the inlet of the circuitous passageway and the remainder are disposed in two rows symmetrical with respect to the center peripheral line of the large diameter squeeze roller, the two rows of rollers being spaced apart a greater distance toward the opposite edges of the periphery of the large diameter squeeze roller in going from the center squeeze roller in the direction of movement of the copy sheets along the circuitous passageway.

3,797,128

PRACTICE BOARD FOR CONTRACT BRIDGE GAMES

Kozo Amano, No. 480, Sasaya-machi, Fuyacho-Takeyamachi Sagaru Nakagyo-ku, Kyoto, Japan

Filed Aug. 7, 1972, Ser. No. 278,458
Int. Cl. G09b 19/22
U.S. Cl. 35—8 B 6 Claims



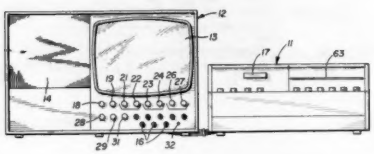
A practice board for contract bridge games comprising a sheet having indicia showing hands, cards to play, numbers of tricks won, bids, etc. of respective players thereon and arranged in accordance with a predetermined contract bridge game and a cover member overlying the sheet and having apertures formed therein corresponding to said indicia on the sheet and through which the indicia on each single trick can be seen. The predetermined or celebrated contract bridge game can be practiced by sliding the sheet downward relative to the cover member trick by trick to show the indicia on the succeeding trick until all the thirteen tricks are over. The lids are mounted over required apertures so that a user can see only his hand and the dummy, a card played by each player in turn and bids at each round of bidding. The practice board according to the invention is handy, simple in structure and may be manufactured at low cost.

3,797,129

HEART SOUNDS TEACHING AND DISPLAY APPARATUS

Abe Ravin, 45 S. Dahlia St., Denver, Colo., and Gerald L. Schlatter, Boulder, Colo., assignors to said Ravin, by said Schlatter

Filed Nov. 10, 1972, Ser. No. 305,633
Int. Cl. G09b 23/28
U.S. Cl. 35—17 30 Claims



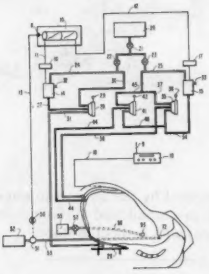
A heart sound simulator for the teaching of cardiac auscultation and diagnosis procedures which utilizes a plurality of separate bands of sound related signals for combination in cyclic and timed sequence to simulate heart pulse cycles or arrhythmic combinations thereof. A program element having instructional and indexing material thereon for visual observation is placed in fixed position as a signal gating element to selectively and/or periodically intercept circuits inclusive of photosensitive elements for the control of said circuits as necessary to duplicate various normal and abnormal heart conditions. Some elements of said circuits are movable and at variable rates whereby various pulse cycles are simulated as the light transmission or signal gating patterns are correspondingly varied. Sound output, sound and electrocardiogram display means and recording and play-back components are provided. Patient derived heart sounds, phonocardiograms and electrocardiograms may be displayed and/or recorded for sound and visual comparisons.

3,797,130

DYNAMIC CHILDBIRTH SIMULATOR FOR TEACHING MATERNITY PATIENT CARE

Charles F. Knapp, and George S. Eades, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 21, 1972, Ser. No. 308,542
Int. Cl. G09b 23/32
U.S. Cl. 35—17 16 Claims



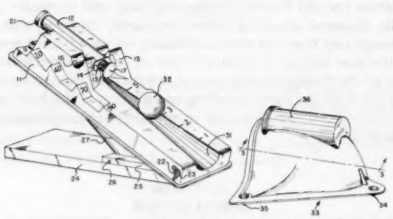
A programmable patient simulator for teaching maternity patient care includes a life size manikin with a pelvis, vaginal canal, uterus, placenta, umbilical cord, and a fetal doll from which heart sounds are emitted. A programmable electropneumatic system controls the simulated uterine contractions, position of the uterus, rupture of membranes, expulsion of fetal doll, and fetal heart rate during labor and delivery sequence.

3,797,131

KINEMATICS EDUCATING

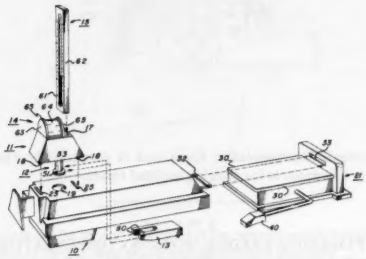
John B. Orfei, North Revere, and John Walters, Lexington, both of Mass., assignors to American Science & Engineering, Inc., Cambridge, Mass.

Filed May 19, 1972, Ser. No. 255,103
Int. Cl. G09b 23/10
U.S. Cl. 35—19 R 10 Claims



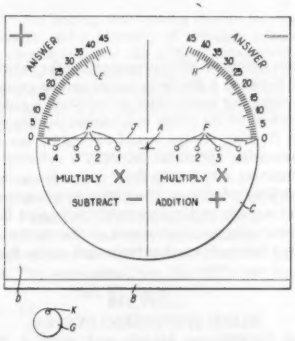
An adjustable inclined plane is formed with recesses for accommodating a modified hypodermic syringe that may accommodate a stopper in place of the needle assembly. A student may conveniently rapidly advance the plunger to expel the stopper and observe its trajectory as a function of the inclined plane angle. The inclined plane is also formed with a trough for guiding a rolling ball toward a sled that rests of three points, is formed with a recess for accommodating a vial for carrying different weight and receives the rolling ball at its forward end so that the student may observe how the kinetic energy of the rolling ball moves the sled a distance related to the angle of the inclined plane and the weight in the vial.

3,797,132
EDUCATIONAL DEVICE
John E. Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1972, Ser. No. 308,864
Int. Cl. G09b *23/16*
U.S. Cl. 35—19 R **12 Claims**



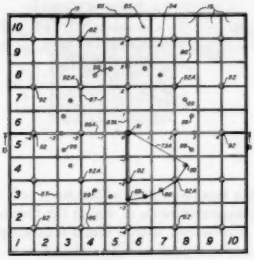
A simple, durable, inexpensive educational device for demonstrating the variables affecting heat production especially adapted for use by educational institutions below the college level is described. The device comprises a base member, a chamber for containing a supply of a liquid, means for securing the chamber to the base member, a thermally conductive metal insert and a thermometer. Included are means on the chamber for holding the metal insert and the thermometer in contact with a supply of liquid. Means are included for rubbing the metal insert.

3,797,133
CALCULATORS
Walter Douglass, 30 Grovewood Close, Chorleywood, and Paul John Murgatroyd, 1 Gullbrook, Boxmoor, Hemel Hempstead, England
Filed Oct. 3, 1972, Ser. No. 294,593
Int. Cl. G09b *19/02*
U.S. Cl. 35—34 **8 Claims**



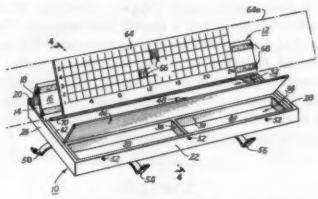
Calculating apparatus for teaching simple arithmetic comprises a support with a horizontally pivoted operating member in the form of a circular disc from which a segment has been removed to form a plate defined by a circular arc of more than 180° in extent and a straight line between the ends of the arc. The member is pivoted at the centre of the arc to rest in stable equilibrium with the straight edge horizontal. A scale behind the member indicates tilt, the straight edge providing pointers. Pins spaced on either side of the pivot may be loaded with discs having weights proportionate to integral values, the spacing of the pins being in arithmetical progression for multiplication, addition, and subtraction calculations and in geometrical progression for division.

3,797,134
ARITHMETIC CONCEPTS DISPLAY BOARD
Eldon S. Wingerd, 12108 Deerwood Ln., Sunnymead, Calif.
Continuation-in-part of Ser. No. 58,217, July 27, 1970, abandoned. This application May 15, 1972, Ser. No. 253,337
Int. Cl. G09b *23/04*
U.S. Cl. 35—34 **2 Claims**



A display board has a grid portion of equal squares, with pegs rising from every other gridline intersection on every other grid line. The grids are defined by ridges or grooves. Adjacent borders of the board bear a number for each row of squares, advancing serially from the common corner square. Bands or plates define circle segments of various proportions within a circle defined by lines or pegs about the intersection of numbered X and Y axes. Elastic bands adapted to fit about two or more pegs show varied geometric shapes, and rods equal to a multiple of the circle radius may move on the board, as may cubes the size of a grid square, the cube faces having arithmetic symbols to indicate problems to be solved in accordance with the cube placement on the board grid with respect to the marginal numbers.

3,797,135
SHELF DISPLAY PLANNING KIT
Edward A. Linker, Summit, N.J., and Clarence M. Lepeer, New York, N.Y., assignors to The Chartmakers, Incorporated, New York, N.Y.
Filed July 3, 1972, Ser. No. 268,686
Int. Cl. G09b *25/00*
U.S. Cl. 35—53 **1 Claim**



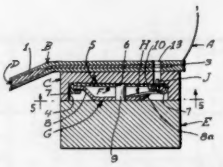
A shelf display planning kit for retail stores providing a compact means for showing simulated shelving and minaturized reproductions of articles thereon and, at the same time providing a storage compartment for such productions, a planning board bearing a shelf arrangement, and associated articles. The entire kit is easily transportable, being light and compact.

3,797,136

SHOE WITH FLEXIBLE HEIGHT ADJUSTMENT SOLE AND ASSORTED HEIGHTS INTERCHANGEABLE HEELS

Richard A. Soleri, 675 Hampshire Rd., Apt. 27, Westlake, Calif.

Filed June 25, 1973, Ser. No. 373,123
Int. Cl. A43b 21/35
U.S. Cl. 36—42 3 Claims



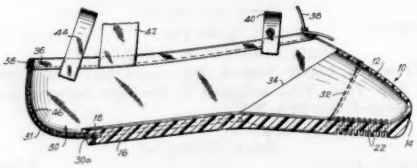
A shoe with a flexible height adjustment sole and assorted heights interchangeable heels in which the flexible height adjustment sole is provided with a metal sole supporting brace that has a thicker mid-portion with thinner more flexible ends one of which is secured to the heel portion of the shoe and the other is secured to the ball portion of the shoe so as to permit a flexing of these two portions as the different heel heights are attached to the shoe. Novel means is also used for releasably securing a heel of a desired height to the sub heel of the shoe.

3,797,137

BALLET SLIPPER

Rebekah Harkness, New York, N.Y., assignor to Pirvoette Projects, Inc., New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 305,737
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AE 10 Claims



There is disclosed a ballet slipper consisting of two main parts — a fabric upper and a plastic foot support. The plastic foot support is substituted for the conventional last and serves the additional function of replacing the stiffening material which is usually provided in the toe of a ballet slipper. If the plastic has the same color as the upper, there is no need to cover the toe of the slipper with fabric; in such a case, the ballet slipper can have an extraordinarily long life.

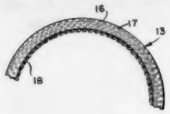
3,797,138

FOAMED SHEET FOR MAKING STIFFENING ELEMENTS

Addison W. Closson, Jr., 30 Coolidge Ave., Cambridge, Mass.

Continuation of Ser. No. 847,724, Aug. 5, 1969, abandoned. This application Mar. 2, 1973, Ser. No. 337,298
Int. Cl. A43b 13/42
U.S. Cl. 36—68 16 Claims

This invention relates to a novel shaped shoe counter article formed of a thermoplastic cellular foam material, a so-called stiffener used to maintain the dimensional integrity of the shoe to conform generally with the heel of a wearer as classified in Class 36, subclass 68; the novel article is formed of an elastomeric thermoplastic foam and is particularly valuable for use in a process for making molded shoes.

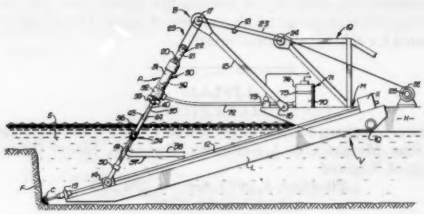


3,797,139

FLOATING DREDGE MOTION COMPENSATOR

Edward Larralde, Santa Barbara, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Aug. 24, 1972, Ser. No. 283,473
Int. Cl. E02f 3/90
U.S. Cl. 37—67 16 Claims



Apparatus automatically compensating for relative vertical movement between a dredging vessel and its cutter, or other formation removing mechanism, to maintain a predetermined vertical position of the cutter mechanism despite vertical motion of the floating dredge vessel caused by sea conditions. The compensating apparatus includes a cylinder and piston device containing a hydraulic fluid under pressure exerting a preselected lifting force on the cutter mechanism and automatically extensible and contractable to permit the vessel to move without effecting movement of the cutter mechanism and the force that such mechanism exerts on the formation.

3,797,140

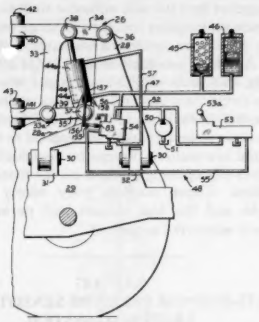
FLUID SUSPENSION SYSTEM

Orcenith D. McWilliams, Morris, and Roger A. Rice, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 5, 1972, Ser. No. 286,025
Int. Cl. B60d 1/00
U.S. Cl. 37—129 22 Claims

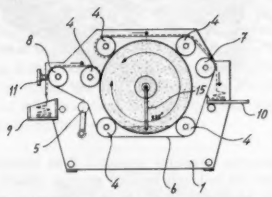
A fluid suspension system for a sprung mass includes a fluid motor having a cushioning end and an opposite end disposed in elevational supporting relation between the sprung mass and an unsprung mass. A resiliently biased fluid pressure system is in constant communication with the cushioning end of the fluid motor normally to resiliently support the sprung mass at substantially a predetermined elevated cushioning position relative to the unsprung mass. A lockout valve affords

selective communication of the opposite end of the fluid motor with the fluid pressure system to equalize pressure in



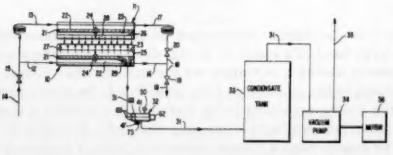
both ends of the motor and permit the sprung mass temporarily to move to a lower predetermined fixed position.

3,797,141
MACHINE FOR DRYING AND IRONING FABRICS
Pedro Pere Parera, Calle Alba Nr. 3, Barcelona, Spain
Filed Dec. 20, 1972, Ser. No. 316,703
Claims priority, application Spain, Dec. 29, 1971, 398,428; Nov. 23, 1972, 408,922.
Int. Cl. D06f *69/02*
U.S. Cl. 38—11 **7 Claims**



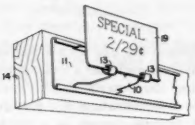
A machine for drying and ironing fabrics having a central heating cylinder and a plurality of pressure rollers disposed around the central cylinder. An endless canvas belt accompanies the fabric to be treated, which belt is guided by the pressure rollers around the central cylinder whereby contact is established with the hot periphery of the cylinder over an arc of at least 330°.

3,797,142
STEAM CONTROL METHOD AND APPARATUS FOR FABRIC PRESSING MACHINE
John T. Gerod, 312 N. Lincoln Ave., Scranton, Pa.
Division of Ser. No. 73,775, Sept. 21, 1970, Pat. No. 3,738,385. This application Nov. 30, 1972, Ser. No. 310,903
Int. Cl. D06f *71/34*
U.S. Cl. 38—15 **2 Claims**



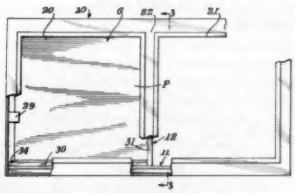
A method for selectively varying the vacuum pressure applied to the buck of a buck and swingable head type fabric pressing machine to establish the optimum vacuum pressure in accord with the weight and drying characteristics of the fabric to be pressed to assure effective drying and setting of the press in the fabric and a vacuum valve for presetting the vacuum pressure to the optimum value by adjustably venting the valve to the atmosphere. The valve is characterized by a vacuum line coupling means that may be removed from the valve without breaking the line connection to gain access to the valve biasing spring means, the valve, and valve seat for the purpose of servicing and replacement.

3,797,143
MARKER DISPLAY DEVICE
Russell S. Miller, 144 S. Rossmore Ave., Los Angeles, Calif.
Filed June 22, 1971, Ser. No. 155,473
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R **1 Claim**



A one-piece clip device for displaying price tags or other markers relating to the sale of merchandise, where the marker is retained by spring tabs which are formed from the panels of the clip and which dig into the surface of the marker with sufficient force to secure the marker. The marker may be inserted with ease but may be pulled out only by exerting considerable effort.

3,797,144
DISPLAY-TYPE PICTURE VIEWER
John H. Weggeland, Lehigh Acres, Fla., assignor to WML Incorporated, Santa Ana, Calif.
Filed Sept. 7, 1972, Ser. No. 287,102
Int. Cl. G09f *11/30*
U.S. Cl. 40—36 **7 Claims**



A display-type viewer particularly adapted for use in commercial areas, such as retail shops, marts, and other populous areas, and in elevated, easily viewable locations, the same including continuously operable means for successively shifting the front picture or sign of a vertical pack of such item and successively and continuously exposing them to the view of the people in the locale.

3,797,145

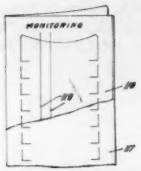
DATA DISPLAY SYSTEM

Edward J. Rapoza, Butler; Maxwell E. Siegel, Sussex, both of N.J.; Weems E. Estelle, Southport, Conn.; Pasquale M. Petrucci, Orange, Conn.; Joseph S. Linarducci, Wilton, Conn.; John Hamma, Milford, Conn., and John Montgomery, Trumbull, Conn., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 15,469, March 2, 1970, Pat. No. 3,706,499. This application Aug. 18, 1972, Ser. No. 281,756

Int. Cl. G09f 7/02

U.S. Cl. 40—63 R 3 Claims



A data display system for use with a blood testing system. The blood testing system includes a colorimeter for observing the light transmission characteristics of a reacted blood sample to determine the concentration of a particular component. Part of the blood testing system is a module including a printed scale which is designed to be positioned immediately adjacent the meter needle when the module is operatively connected to the colorimeter. the units of the scale being correlated to the particular blood determination of the module such that the scale reads directly in the units of the test being conducted. A patient record card is provided which is adapted to overlie and be temporarily affixed to the module. The card includes a scale which overlies the scale of the module and is adapted to be marked to serve as a permanent record of the test determination. A removable tear-off tab is associated with the card which may be utilized to identify a blood sample by patient number and test. A number of marked cards, obtained over a period of time for a particular test, is adapted to be placed in overlapping relationship whereby the test results will be displayed as a graph plotted against time. A folder is provided to retain the cards in such overlapping relationship, the folder having a clear plastic overlay with indicia thereon to indicate the normal range of the test results.

3,797,146

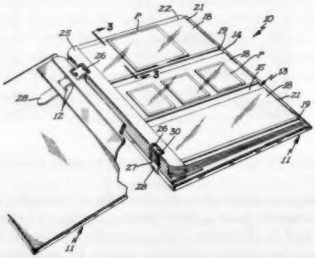
ALBUM HAVING POCKETED ALBUM PAGES

William W. Holes, St. Cloud, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.

Filed Oct. 14, 1971, Ser. No. 189,168

Int. Cl. B42f 13/06

U.S. Cl. 40—104.18 1 Claim



An album comprises front and rear covers hingedly connected to a plurality of album pages by suitable flexible straps. In one form of the album page structure each album page is formed from a single rectangular sheet of paper material folded upon itself to form front and rear laminae which are secured together by a suitable adhesive such as glue. A plurality of elongate rectangular transparent strips formed of a suitable flexible plastic are applied to one surface of the sheet prior to folding the sheet, and each of these strips are secured to the sheet along its lower longitudinal edge. When the sheet is folded, the strips form upwardly opening pockets on the front and rear sides of each page. In another form of the album page, transverse strips of plastic are applied to both surfaces of the sheet and are secured thereto by heat sealing or glue also to form upwardly opening pockets on the front and rear sides of the sheet. These pockets very nicely accommodate photographs and the like therein and permit them to be removed and reinserted as desired.

3,797,147

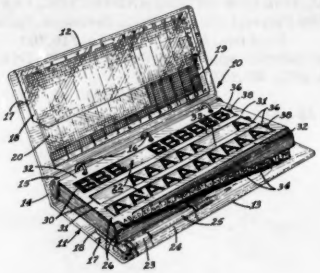
MULTI-PURPOSE PRESSURE SENSITIVE FONT LETTERING SYSTEM

Jack Lemberg, 3442 N. 29th Ave., Phoenix, Ariz.

Filed Feb. 1, 1972, Ser. No. 222,588

Int. Cl. G09f 3/00

U.S. Cl. 40—104.19 1 Claim



A multi-purpose pressure sensitive font lettering system, which includes an indexed symbol storage album containing all the letters, numbers, symbols and apparatus required for making signs and preparing copy for art work and the like.

3,797,148

ARRANGEMENT IN OR RELATING TO YEAR CALENDAR

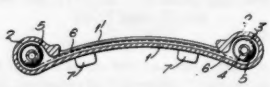
Nils Joergen Ivengsberg, Olav Trygvasonsvei 7f, Sofiemyr, and Ivar Henry Andersen, Enerstien 10, Kraakeroy, both of Norway

Filed Feb. 15, 1973, Ser. No. 332,715

Claims priority, application Norway, Nov. 22, 1972, 4282/72.

Int. Cl. G09d 3/06

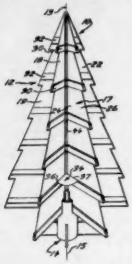
U.S. Cl. 40—117 3 Claims



A calendar display mechanism adapted to be mounted on the wrist band of a watch or similar device comprising a unitary casing having a curvature on the undersurface adapted to conform to the curvature of the wrist band, the upper surface of the casing providing in its intermediate portion a display area over which a flexible calendar may pass. At opposite ends of the display area a hollow cylindrical portion is provided to house the opposite ends of the calendar strip and spindles are mounted coaxially therein to store and afford displacement of the strip to thereby enable display of the different portions of

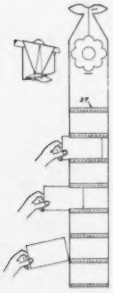
the strip containing different months. The spindles are provided with exterior knobs at one end and are journaled in the endwalls of the hollow cylindrical portions of the casing.

3,797,149
GREETING CARD DISPLAY DEVICE
Alexander Robert Morrison, 358 E. 63rd Ave., Vancouver, British Columbia, Canada
Filed Mar. 5, 1973, Ser. No. 337,938
Int. Cl. G09f 1/10
U.S. Cl. 40—124.2 **10 Claims**



Greeting card display device that simulates Christmas tree when extended, and can be folded generally flat for storage. Device has crown portion having hinged card holders extending radially therefrom, pockets on card holders to accept cards for display. Cylindrical trunk portion has upper end with axial slots to accept card holders, and lower end with axial slots to accept leg portions. Card holders are hinged together by staggered integral hinges or are secured together by spring clip passing through card holder slots in register with each other. Leg portions are flat sheet members with compatible slots, or bent wire members having fingers to grip crown portion and legs to contact ground.

3,797,150
DISPLAY APPARATUS
Sandrajeanne Bushell Hinckley, 11711 E. Florence Ave. Apt. 27, Santa Fe Springs, Calif.
Filed Mar. 9, 1970, Ser. No. 7,178
Int. Cl. G09f 1/10
U.S. Cl. 40—124.4 **7 Claims**

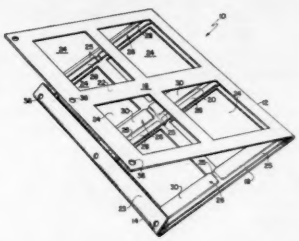


A display apparatus for greeting cards or snapshots consisting of a strip of material, preferably felt, containing partitions which enable the cards or snapshots to be exhibited while the display apparatus is hung in a vertical position. The display apparatus, upon which can also be buttons pinned and ribbons attached, is suspended by its own versatile loops from a wide variety of supporting structures.

3,797,151
STRANDED MOTORISTS' SIGN
Halton B. Dexter, 2632 S. Third St., Louisville, Ky.
Filed Dec. 6, 1971, Ser. No. 204,960
Int. Cl. G09f 7/00
U.S. Cl. 40—129 C **3 Claims**

Discloses a stranded motorists' distress sign for use by motorists stranded on the interstate highway system. The sign comprises a board carrying a visible distress legend which is supported by a base member. A magnetized mounting means is utilized for mounting the sign to the metallic top of an automotive vehicle, so as to be visible to passing motorists, who can send help to the location.

3,797,152
PHOTOGRAPH ALBUM PAGE
Edison R. Brandt, Cohasset, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 23, 1971, Ser. No. 211,252
Int. Cl. G09f 1/10
U.S. Cl. 40—158 R **4 Claims**

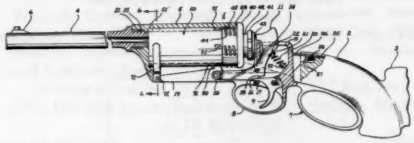


An album page for photographs formed of a single folded plastic sheet containing a plurality of picture cut-outs on either side. Photographs are inserted on the inside of the page behind the respective cut-outs which conform to the size of the film format. The photographs are releasably retained in pockets formed above and below each cutout on the interior of the page. The page is folded in half and, in a preferred embodiment, may be held closed by tucking the front of the page underneath a folded portion of the back of the page with the mounted photographs facing outwardly.

3,797,153
ROTARY SHELL CHAMBER
Edward A. Hagan, 617 LaVilla Pl., Tucson, Ariz.
Filed Dec. 18, 1972, Ser. No. 316,119
Int. Cl. F41c 1/11/00, 7/00
U.S. Cl. 42—27 **8 Claims**

A rotary shell chamber for use in firearms is disclosed. The rotary shell chamber housing loaded shells is secured within a rifle, such as a lever action rifle, by a breech plug. The breech plug, through a plurality of locking lugs, locks the chamber and the shells disposed therein within the receiver of the rifle to effect a positive lock up as strong as conventional bolt ac-

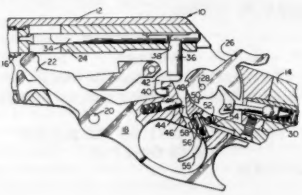
tion rifles. The breech plug is rotatable to disengage from the receiver and is laterally pivotable to permit rearward extraction and reloading of the chamber. The lever action, acting through a pawl arrangement, rotates the chamber to position an unfired shell in alignment with the barrel.



3,797,154
SEAR-DISCONNECTOR FOR LEVER-ACTION FIREARMS

Louis W. Seecamp, New Haven, Conn., assignor to O. F. Mossberg & Sons, Inc., North Haven, Conn.

Filed Mar. 26, 1973, Ser. No. 344,936
Int. Cl. F41c *19/00*
U.S. Cl. 42—69 B **4 Claims**

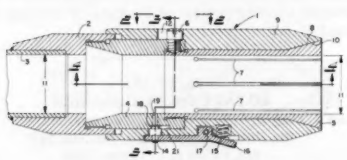


A sear-disconnector for lever-action firearms for preventing accidental discharge of the firearm when the finger-lever is manipulated in order to load the chamber and cock the hammer, wherein the trigger is mounted on the finger-lever and is provided with a plunger which is normally located in an actuating position to disengage the sear from the hammer, but which resiliently engages an abutment surface on the sear if the trigger is retracted as the finger-lever is being closed, thereby preventing the plunger from moving into its actuating position until the trigger is released.

3,797,155
AUTOMATIC SHOTGUN CHOKE

Jessop Smith, Gates Mills, and Thomas R. Kocis, Streetsboro, both of Ohio, assignors to Triple-S Development Co., Inc., Wickliffe, Ohio

Filed Nov. 22, 1972, Ser. No. 308,831
Int. Cl. F41c *21/00*
U.S. Cl. 42—79 **6 Claims**

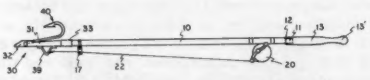


An automatic shotgun choke characterized in the provision of a choke member adapted to be secured to the muzzle end of a shotgun barrel; a recoil and spring actuated choke operating sleeve around said choke member; and a gas pressure actuated latch on said choke sleeve engaged in a first recess in the choke member which retains said sleeve and choke member with the latter in open bore condition until after the initial shot is fired, at which time, the latch is actuated by the gas pressure of the initial shot to automatically release the sleeve and choke member for relative spring and recoil actuation to full choke position. In the full choke position, the latch engages a second recess in the choke member so that the second and succeeding shots will be fired under full choke conditions. Whenever desired, the latch may be disengaged from the second (full choke) recess and the choke sleeve moved against spring pressure to open bore position at which it is latched and exposed to gas pressure when the next shot is fired. The automatic shotgun choke herein is further characterized in that the choke sleeve may, upon disengagement of the latch from the first (open bore) recess, be rotated to open bore position and whereat the latch engages a third recess in the choke member but is not exposed to gas pressure and hence the choke assembly will remain in open bore position for any number of shots until such time that the choke sleeve is manually shifted to automatic choke position with the latch engaged in the first (open choke) recess.

3,797,156
FLYING FISH GAFF

Michael Telech, Beaufort, S.C., assignor to James H. Moss, Beaufort, S.C., a part interest

Filed June 9, 1972, Ser. No. 261,359
Int. Cl. A01k *97/14*
U.S. Cl. 43—5 **10 Claims**

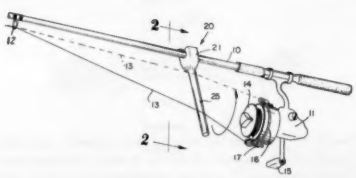


An improved flying fish gaff comprising an elongated, hand held rod with a tip removably secured to one end thereof. Hook means is pivotally secured to the tip and is normally disposed parallel to the tip where a barbed point is exposed for implanting same in a fish body. A flexible retrieval means is secured at one end to the tip and at an opposite end to a reel means mounted on the rod. Once a fish is impaled on the hook means, the hook means pivots around the tip and extends therefrom; the tip is pulled from the rod and the retrieval means plays out from the reel means. Thereafter the fish may be landed by proper manipulation of the reel means.

3,797,157
JIGGING ATTACHMENT FOR FISHING RODS

Joseph Semich, 2640 Parkwood Dr., Speedway, Ind.

Filed Oct. 13, 1972, Ser. No. 297,271
Int. Cl. A01k *87/00*
U.S. Cl. 43—19.2 **6 Claims**



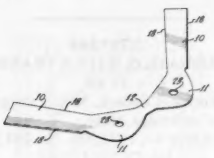
A jigging attachment for a fishing rod equipped with a spinning reel consisting of a head formed with a longitudinal bore opening radially through a longitudinal slot, the head being resilient so that the rod may be snapped through the slot into and out of the bore where it may be frictionally gripped, and an integral stem substantially perpendicular to the head

bore so that the stem may be adjustably positioned on the rod near the reel to extend at a selected angle away from the plane which is common to the rod and the spindle of the reel to divert the line during retrieval thereof onto the reel spindle.

3,797,158
ROLLER TIP FOR FISHING RODS

Otto Immenroth, La Habra, and Robert C. Eschbach, Newport Beach, both of Calif., assignors to Axelson Fishing Tackle Mfg. Co., Newport Beach, Calif.

Continuation of Ser. No. 44,085, June 8, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,124
Int. Cl. A01k *87/04*
U.S. Cl. 43—24 **7 Claims**

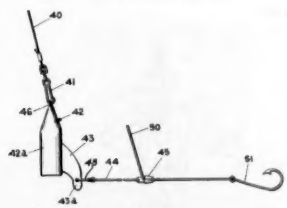


A roller tip comprising a single piece of sheet metal formed and bent into parallel frame sides which are flanged to prevent wear on the line. Each frame side is integral with a semitubular sleeve side portion, and such side portions are connected to each other at upper and lower seams in order to form a sleeve adapted to receive the tip of a fishing rod. A roller is rotatably mounted between the frame sides, by means of axle means extending perpendicularly to such sides. The frame sides are integral with opposite ends of a bridge disposed above the roller and preventing the line from leaving the roller tip, such bridge being so constructed that the portion thereof lying in a medial plane between said frame sides is generally parallel to a tangent to the roller, such tangent intersecting an extended axis of the sleeve on the opposite side of the axle means from such sleeve.

3,797,159
APPARATUS FOR CONTROL DEPTH FISHING

James E. Rieth, 2315 Okemos Dr., S.E., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 20,934, March 19, 1970, Pat. No. 3,614,016. This application Feb. 16, 1971, Ser. No. 115,297
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **9 Claims**

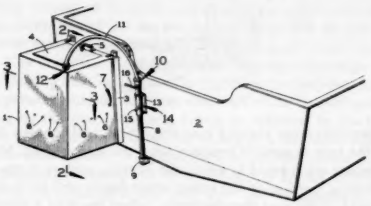


A reel of large diameter and having a handle is mounted on a base. A steel control line is wound onto the reel. Secured to the end of this line is a heavy weight having a stabilizing fin projecting therefrom. A release or clip line having a clip secured thereto is fastened to an aperture in the stabilizer fin. The clip is fastened to a line having a lure thereon which is actually used for fishing.

3,797,160
SELF FLUSHING LIVE BAIT CONTAINER FOR POWER BOATS

Edgar R. Lewis, Jr., 6690 S.W. 98 St., Miami, Fla.

Filed Sept. 5, 1972, Ser. No. 286,616
Int. Cl. A01k *97/04*
U.S. Cl. 43—55 **3 Claims**

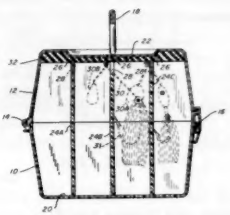


This invention comprehends a container for holding live bait in near normal environment slidably secured to a power boat for manually lowering the container for natural circulation of water therethrough when the boat is not moving. The container may be manually raised above the water and is supplied with a flow of water by a manually controlled water scoop when the boat is underway. The water scoop is separately mounted, and is vertically movable by camming means.

3,797,161
STORAGE BOX FOR FISHING LURES

Ross H. Smallwood, 2935 S. Peoria, Tulsa, Okla.

Filed Nov. 10, 1972, Ser. No. 305,278
Int. Cl. A01k *97/06*
U.S. Cl. 43—57.5 R **2 Claims**



A tackle box for housing fishing lures including a box lower portion, a hinged upper portion, and a plurality of vertical panels spaced apart and parallel from each other positioned in the bottom box portion, the upper edge of each of the panels having a plurality of vertical spaced apart slots of sufficient width to receive the wire or hook portion of a fishing lure.

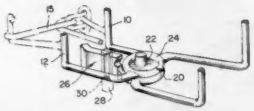
3,797,162
RELEASABLE MOUNT MEANS FOR ANIMAL TRAP

Frank Ralph Conibear, 2170 Evergreen Pl., Victoria, British Columbia, Canada

Filed Apr. 24, 1972, Ser. No. 246,526
Int. Cl. A01n *23/28*
U.S. Cl. 43—90 **10 Claims**

An improved pivot means for a rotating frame animal trap wherein at least one of the sockets or apertures in which the pivot pins are rotatively seated are substantially enlarged to allow limited translatory, as well as rotative, motion of the pins therein when the trap is fired. This feature permits the trap frames to adjust relative to one another in response to an obstruction in one of the pairs of jaws, so that the other pair of jaws closes more tightly than otherwise would have been

possible. Additionally, to facilitate its mounting, a bearing surface is fixed to such a trap or a known rotating frame trap, when the trap has an actuator associated with just the upper pair of adjacent frame ends. The bearing surface is fixed to one of the lower frame ends and adapted to cooperate with the other spaced apart lower frame end when the trap is in set



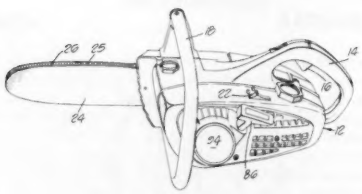
position, to clamp about a mounting post, and thereby firmly hold the trap in upright position until the trap is fired. Notch-like means are formed in either the bearing surface or the corresponding portion of the other lower frame end to facilitate clamping of the post therebetween. When the trap is fired, the mounting post is no longer so clamped and the trap can fall free of it.

3,797,163

TOY CHAIN SAW WITH SOUNDERS FOR SIMULATING IDLING AND CHAIN SAW DRIVING NOISES

Leonard H. McRoskey; John W. McRoskey, both of Los Angeles, and Delbert D. Swartz, Torrance, all of Calif., assignors to Republic Tool & Manufacturing Corp., Los Angeles, Calif.

Filed Mar. 31, 1972, Ser. No. 240,062
Int. Cl. A63h *33/30*
U.S. Cl. 46—39 **15 Claims**



A miniaturized toy chain which closely simulates the appearance, operation and running sounds of a full sized chain saw, but which is completely safe having a harmless ball chain running in a groove within the periphery of an elongated blade which protrudes forwardly from a housing or body portion. The operational sequences, including starting the small electric motor which powers the toy by pulling a pull cord, initiating the rotation of the ball chain by squeezing a trigger on a handle provided on the housing and stopping the motor by operating an on-off switch, realistically simulate the operational sequence of a conventional chain saw. A sound emitter is provided within the housing to appropriately simulate both the idling and running sounds of an internal combustion engine of the type generally used in conventional chain saws.

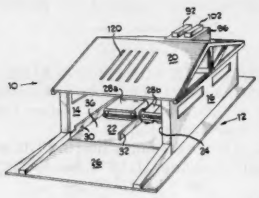
3,797,164

TOY VEHICLE LAUNCHING STATION

Marvin I. Glass, Chicago; Robert McKay, Morton Grove, and Jeffrey Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 27, 1972, Ser. No. 292,649
Int. Cl. A63h *17/44*
U.S. Cl. 46—232 **8 Claims**

A toy vehicle launching station configured to simulate a garage and having a pair of launching plungers movable between a retracted, cocked state and a released, extended state and a sound producing means in the form of a siren and associated with trigger means for activating the siren and



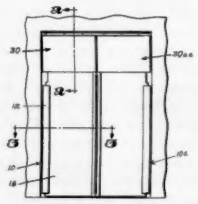
releasing the plungers from a cocked state to launch a vehicle thereby.

3,797,165

DOOR IN COMBINATION WITH A TRANSOM CLOSURE FLAP

August James Kochis, Concord, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed May 10, 1972, Ser. No. 251,942
Int. Cl. E01f *13/00*
U.S. Cl. 49—9 **3 Claims**



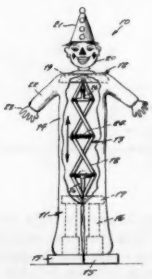
A resilient door is used in combination with a flexible closure flap to close a transom space, and that is mounted on a header or adjoining structure above the door. Said flap normally rests on or is closely adjacent, the upper edge of the door to close off a room, and has a projecting tongue that is held by two retaining sheets that are cemented thereto, and cemented to each other above said tongue.

3,797,166

SPRY SPRINGY SPROUTING CLOWN

Adele Murray, 4480 Turney, Cleveland, Ohio

Filed Dec. 29, 1971, Ser. No. 213,347
Int. Cl. A63h *11/00*
U.S. Cl. 46—119 **1 Claim**



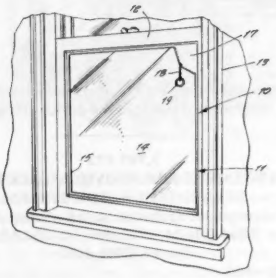
A toy in the form of a doll that maybe designed to represent a clown, the doll being readily expandable in height from a

contracted short size, the device comprising an upper and lower portion of a doll having an intermediate portion there between consisting of a lazy tong construction fitted with a spring, the outer side of the doll being fitted with a clothes fabric having sufficient slack around the intermediate portion so to permit the doll to expand into its elongated condition when a child simply depresses a front button for activating the lazy tong spring.

3,797,167
FIRE ESCAPE WINDOW

Franz Gomboc, 675 Valour Rd., Winnipeg 10, Manitoba, Canada

Filed Mar. 7, 1972, Ser. No. 232,429
Int. Cl. E06b *3/32*
U.S. Cl. 49—141 **1 Claim**

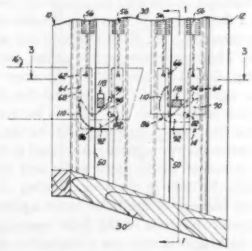


An improved window pane for a house or building so to permit a person to quickly escape outward therethrough without need to raise the window sash in case of a fire; the window pane consisting of a transparent clear plastic panel molded within a rigid rubber frame that fits into the window sash, the edge of the panel being scored or perforated, and one corner of the panel being secured to one end of a pull cord which at its other end is attached to a ring for being conveniently pulled by a person to rip out the transparent panel from the frame so to quickly make an access opening through which he can escape out of the house or building.

3,797,168
AUTOMATICALLY-LOCKING POSITIVELY-UNLOCKED SASH BALANCE

Donald M. Trout, 15750 Meyers Rd., Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,378
Int. Cl. E05d *15/22, 13/12*
U.S. Cl. 49—181 **10 Claims**



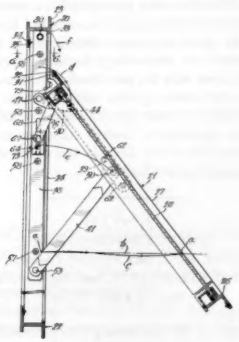
A double-hung tiltable sliding sash window installation has elongated sash guides mounted on opposite sides of its window frame, the sash guides on at least one side of the window frame having elongated longitudinally-slotted spring casings associated therewith. Secured to the upper end of each spring casing is an elongated sash balancing spring, the lower end of which is connected to a locking device therefor including an elongated slide body having an elongated longitudinal opening therein. Pivotally mounted on a pivot element offset laterally from the central axis of the slide body is an approximately J-shaped bent locking lever having on one side of said pivot element a bent locking arm with an arcuate externally-serrated locking portion at its outer end disposed excentrically to said pivot element and having on the opposite side of said pivot element a cam arm inclined at an obtuse angle to said locking arm. The serrations on the excentric arcuate outer edge of the bent locking arm are adapted to be pulled forcibly into locking engagement with the adjacent side wall of the balancing spring casing by the sash-balancing spring in response to the tiliting of the sash and the consequent tilting of a flat-sided trunnion key secured thereto. This trunnion key is insertable through the elongated slot in the sash balancing spring casing and through the opening in the slide body into engagement either with the cam arm or with the bent locking arm of the locking lever.

When the sash and its trunnion keys are swung away from the plane of its sash guides into a tilted position, the trunnion key within the balancing spring casing rotates and operatively engages the contact arm of the locking lever so as to forcibly swing its serrated excentric arcuate locking portion into locking engagement with the adjacent side wall of the spring casing. Swinging of the sash back into the plane of the sash guides and the consequent swinging of the trunnion key causes the trunnion key within the sash balancing spring casing to rotate in the reverse direction and engage the inclined cam arm of the locking lever whereupon a downward push on the sash forcibly swings the locking portion of the locking arm of the locking lever out of locking engagement with the adjacent side wall of the spring casing, thereby releasing the thus-unlocked sash to move freely upward or downward. This locking and unlocking action occurs whether or not the sash is completely removed from the window frame as for repair purposes or is only tilted relatively thereto for cleaning.

3,797,169
WINDOW HINGE

Henry P. Armstrong, Etobicoke, Ontario, Canada, assignor to Truth Incorporated, Owatonna, Minn.

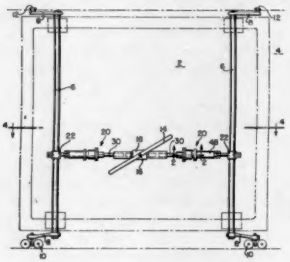
Filed Oct. 19, 1972, Ser. No. 299,107
Int. Cl. E05d *15/40*
U.S. Cl. 49—248 **1 Claim**



A hinge for pivotally supporting a window sash for angular opening and closing movement relative to a window frame, including first and second links pivotally mounted on the window frame and pivotally connected to the window sash, a friction device slidably mounted on the window frame indepen-

dent of the pivotal mounting of the first and second links on the window frame, a third link pivotally connected to the friction device and pivotally connected to one of the first and second links so that the friction device retards movement of the sash, and coacting cam means including a roller mounted on the window frame and a cam yoke on the window sash operable to hold the sash closed and also arrest inward movement of the sash as it is swung toward open position. A pair of hinges are required along opposite edges of a sash.

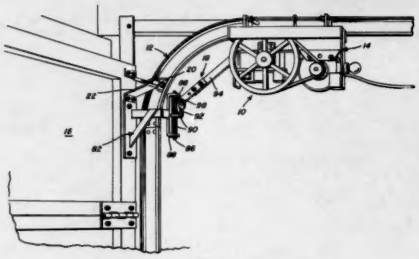
3,797,170
LOCKING ASSEMBLY FOR SLIDING PLUG DOORS
Lucien W. Lemon, Renton, Wash., assignor to Paccar Inc., Bellevue, Wash.
Continuation-in-part of Ser. No. 250,781, May 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,730, Sept. 20, 1971, abandoned. This application Oct. 12, 1972, Ser. No. 296,788
Int. Cl. E05d *15/10*
U.S. Cl. 49—220 **2 Claims**



A locking assembly for sliding plug doors including a pair of vertical door supporting members mounted to lever arms allowing movement of the door in a direction perpendicular to the side of the car into and out of a tapered framework. The locking mechanism includes a pair of elongatable or extensible members which cause the lever arms to pivot about their axis, thus securing the door in the door opening. The members, through the use of a screw and ball nut, are capable of exerting sufficient outward force upon the closing lever mechanism to minimize the necessity for a secondary locking means, and considerably reduce the external force required by the operator to close and open the door. In the event that security demands a secondary locking means, vertically spaced locking bars may be provided. The secondary locking bars will be operated by the same screw and ball nut mechanism which operates the locking assembly, thus combining the two operations. Safety hangers are provided to prevent dislodgment of the door in the event the crank arms become disengaged or are broken.

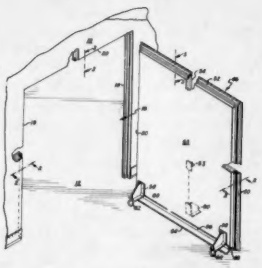
3,797,171
GARAGE DOOR OPENER
Richard L. Farmer, Rt. 2, Box 357-14, Tacoma, Wash.
Filed Aug. 25, 1972, Ser. No. 283,764
Int. Cl. E05f *15/16*
U.S. Cl. 49—360 **14 Claims**

A door operating device having two identical sets of rollers spaced from one another along a guide rail. Each set of rollers has a roller engaging a surface of the guide rail, and another, opposed roller engaging another surface of the same guide rail. A frame supported by the rollers for movement therewith has mounted thereon a reversible motor and a drive train for transmitting power from the motor to a roller of each of the roller sets. A bar connected to the frame is attached to a shock absorbing arrangement mounted on a door to be opened and closed by the device. A control system including limit switches



on the frame and triggering members associated with the rail limits and reverses movement of the device along the rail.

3,797,172
ARRANGEMENT FOR PROVIDING ACCESS TO A SEALED INCUBATOR SYSTEM
Robert W. Cannon, 6565 Joseph St. S.E., Salem, Oreg.
Filed July 24, 1972, Ser. No. 274,621
Int. Cl. E06b *3/32*
U.S. Cl. 49—463 **10 Claims**



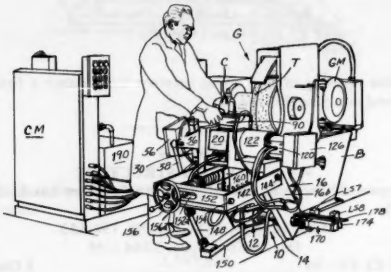
A door releasably mounted to a wall forming a part of an enclosure of a chamber of a sealed incubator system. The door is supported on a floor on casters so as to enable the door, in its entirety, to be moved on the floor into and out of a door opening in the wall. The door opening has jambs, and the door has sides and a top. Gaskets mounted to the door sides and the door top bear against the door sides and the door top bears against the door jambs when the door is located in the door opening to seal the sides and the top of the door in the door opening, and permanent magnets embedded in the gaskets are magnetically attracted to the door sides and the door top to releasably retain the door in the door opening. A resilient strip mounted to the bottom of the door bears against the floor to seal the bottom of the door in the door opening. The casters are mounted on brackets that are attached to the door opening. The door and the brackets are assembled by mounting the brackets to the door while the door is propped in the door opening with the sides and the top of the door bearing against the door jambs, and the bottom of the door spaced from the floor in such a manner that the casters are supported on the floor.

3,797,173

WORK HOLDING, POSITIONING, AND FEEDING MECHANISM

George H. Pettee, Sterling, and Edward R. Blake, Worcester, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 59,433, July 30, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,578
Int. Cl. B24b 7/00
U.S. Cl. 51—3 22 Claims



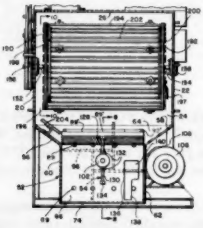
A semi-automatic programmed cam controlled fluid actuated mechanism which holds, sequencially positions and pressure feeds various portions of rough workpieces such as, foundry castings, and forgings into a multi-pointed cutting tool of a machine tool for snagging gates, risers, sprues and other unwanted material therefrom. The mechanism is adapted to be fixed adjacent the cutting tool of a machine and can move the workpiece in a number of different directions about a plurality of axes to perform the necessary operations in any desired preselected programmed sequence. Workholders designed for each specific casting can be interchangeably mounted on the work support. Control means comprising programmable stepping switches, with numerous contacts and easily adjustable cams actuating fixed limit switches are provided to actuate various fluid directional valves, fluid motors, and movable components in the proper sequence and directions to produce the desired motions.

3,797,174

SHOT CLEANING MACHINE

Ronald D. Hazlewood, Lindsborg, Kans., assignor to Vacu-Blast Corporation, Belmont, Calif.

Filed Dec. 15, 1971, Ser. No. 208,185
Int. Cl. B24c 3/14
U.S. Cl. 51—9 14 Claims



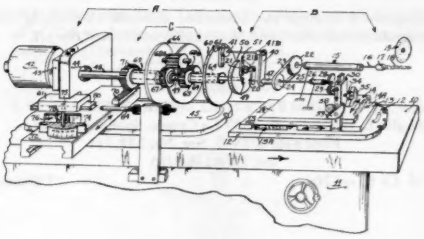
A shot cleaning machine of the type wherein shot is cyclically impelled by a rotary impeller to impinge upon the contents of a rotatable reticulated basket, with spent shot being returned to the impeller, with the machine being specially provided with rotary means coupled to the impeller for automatically regulating the rate of return of spent shot to the impeller to be largely a function of the rate of rotation of the impeller so that when the latter is decelerated and stopped the rate of shot fed thereinto is reduced so that the latter does not become so loaded with shot as to become difficult or impossible to restart.

3,797,175

SPIRAL AND RADIAL RELIEF GRINDING FIXTURES WITH COAXIAL PLANETARY DIFFERENTIAL DRIVE

Frank G. Nicolaus, and Charles T. Breitenstein, both of Chicago, Ill., assignors to Spiral Step Tool Company, Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 182,757, Sept. 22, 1971, abandoned. This application Sept. 20, 1972, Ser. No. 290,742
Int. Cl. B24b 3/24
U.S. Cl. 51—95 LH 14 Claims



Cooperative driving and driven grinding and form-relieving fixtures are disclosed suitable for selective spiral grinding with both radial and end relief on spiral or straight-fluted tools such as drills, reamers, end mills, counter bores, and the like. The driving fixture embodies a differential modulating system including a single power shaft completely traversing the rotative axis of the carrier or housing of a novel differential gear unit which is coupled to the relieving fixture by concentric independently separable coupling cranks, one of which transmits the differentially modulated motor driving torque to a work spindle, and the other of which transmits a constant motor shaft torque to a sine-bar cam system on the relieving fixture for simultaneously reciprocating two cross slide tables which mount the work spindle and impart simultaneously longitudinal and lateral or radial motions to the work spindle while the latter is being rotated through the differential drive system. The concentric crank means can be selectively decoupled and:or the differential modulation can be adjusted to procure a variety of complex or simple motions of the work spindle.

3,797,176

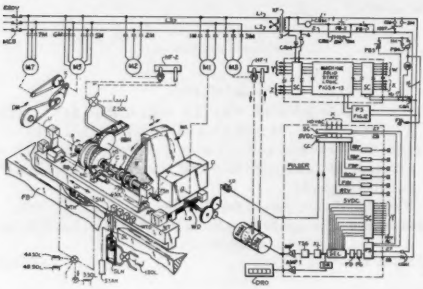
DUAL-CYCLE CAM GRINDING MACHINE WITH ELECTRICAL PULSE OPERATED WHEEL FEED

George E. Wespi, Holden, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

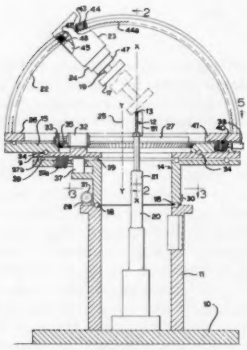
Continuation-in-part of Ser. No. 60,288, Aug. 3, 1970, Pat. No. 3,701,220. This application Jan. 17, 1972, Ser. No. 218,359
Int. Cl. B24b 19/12
U.S. Cl. 51—101 R 11 Claims

Improved dual-cycle camshaft grinding machine, method of operation thereof, and improved wheel feed control sub-assembly therefor with a grinding wheel feed driven by an electro-hydraulic pulse motor regulated by open loop numerical control. Solid state machine logic regulates the initiation of

open loop wheel feeding steps and controls related machine functions. Hand control for purposes of calibration setup is accomplished through the automatic controls eliminating the redundant handwheel and like manual controls of the art.



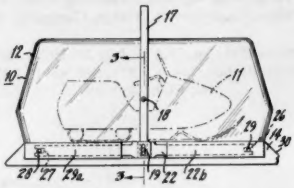
3,797,177
GEM FACETING APPARATUS
Douglas L. Hoffman, W. 3507 La Crosse, Spokane, Wash.
Filed Feb. 2, 1972, Ser. No. 222,731
Int. Cl. B24b *9/16*
U.S. Cl. 51—120 **17 Claims**



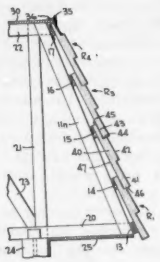
A faceting apparatus capable of automatically cutting a predetermined pattern of facets on rough gems. The machine basically includes a gem holder and an angularly adjustable and movable grinding surface. The gem is held at a stationary location while the grinding surface is movable in orientation for cutting a series of pre-selected angular facets. The gem itself might also be angularly indexed and axially located relative to the grinding surface to control depth of cut during a grinding step.

3,797,178
VEHICLE SHELTER EMPLOYING A DUAL OPERATING SELECTIVE HINGE APPARATUS
James Mule, 35 Lopatcong Dr., Trenton, N.J.
Filed Feb. 12, 1973, Ser. No. 331,650
Int. Cl. E04b *7/16*
U.S. Cl. 52—66 **10 Claims**

There is disclosed a portable vehicle shelter for snowmobiles and similar vehicles which comprises a cover member pivotally mounted on a frame assembly operated by means of a lever controlled assembly which can selectively form a hinge with first and second pin assemblies mounted on the frame to enable opening of said cover member from either a first or second side of said shelter.



3,797,179
MANSARD ROOF STRUCTURE
Norman G. Jackson, 2609 N.W. 19th St., Fort Lauderdale, Fla.
Filed June 25, 1971, Ser. No. 156,653
Int. Cl. E04b *7/02*; **E04d** *1/36*
U.S. Cl. 52—90 **5 Claims**

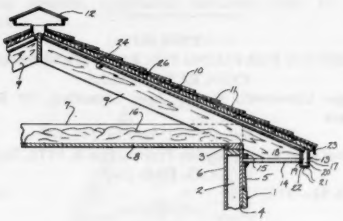


Disclosed is an improved mansard type roof and a method of installing same. Roofing panels, made of expanded clay, foam, waterproofing, and wire mesh are provided in a form and shape that permits the panels to be assembled in horizontal rows with the upper and lower edges of adjacent panels overlapping to provide a watertight joint. Special vertical connection members are provided to assure watertight sealing between the vertical edges of adjacent panels and special means are provided to join the top row of roofing panels to the flat portion of the roof that overlies the majority of the building or house. The construction and installation of the roofing panels according to the disclosed method eliminates the need for separate waterproofing membranes and insulating layers and provides a fire resistant, waterproof roof of any desired color and surface configuration.

3,797,180
VENTILATED ROOF CONSTRUCTION
Howard L. Grange, P. O. Box E, Darlington, Wis.
Filed July 17, 1972, Ser. No. 272,380
Int. Cl. E04b *7/18*; **E04d** *13/06*
U.S. Cl. 52—95 **8 Claims**

A roof construction employs a continuous corrugated baffle between adjacent parallel spaced roof members which is secured between the roof deck and the roof members. The baffle may extend from the facia to the ridge or any intermediate area therebetween and provides at least one channel between adjacent roof members for conducting air from the facia to a vent at the ridge to prevent the formation of ice dams on the roof in the winter as well as providing an interior flashing for collecting and removing water which incidentally

seeps through the roof deck. A second embodiment employs a continuous sheet as a baffle while a third embodiment em-

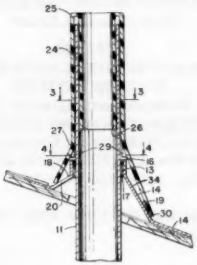


ploys a continuous sheet having spacing fins for forming the channels.

3,797,181
ROOF VENT PIPE SHIELD

Frank J. Nievelt, Troy, Mich., assignor to Zelda Nievelt, Royal Oak, Mich.

Continuation-in-part of Ser. No. 490,382, Sept. 27, 1965, abandoned. This application Oct. 10, 1966, Ser. No. 585,412
Int. Cl. E04d *13/08*
U.S. Cl. 52—105 **10 Claims**



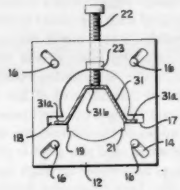
A shield for protecting a roof vent pipe has an outer cylindrical sheath extending downwardly for a substantial distance with a substantially uniform outer diameter and terminating at the bottom in a flaring portion adapted to contact with the sealing base of the vent pipe. The upper end is inturned to form an inner cylinder extending downwardly for a distance substantially greater than the outer diameter of the outer cylinder. The vent pipe is thereby enclosed between the outer and inner portions of the shield. The shield is preferably molded from a non-metallic material such as polypropylene plastic.

3,797,182
POST ANCHOR

Edward C. Eichstaedt, 31 New Britain Ave., Ormond Beach, Fla.

Filed Oct. 30, 1972, Ser. No. 302,055
Int. Cl. E02d *5/74*
U.S. Cl. 52—156 **3 Claims**

Disclosed is an anchor or stabilizer for fence posts, or the like, which is provided with an aperture to receive the post, the aperture having a configuration such that the anchor can

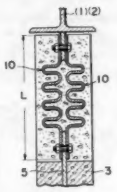


universally be used on posts of round, rectangular or channel-shaped cross-section.

3,797,183
BEARING WALLS AND CONNECTING MEMBERS THEREFOR

Shoichi Kobayashi; Ikuo Yamaguchi, and Katuyoshi Konami, all of Tokyo, Japan, assignors to Takenaka Komuten Company, Ltd., Osaka-shi, Osaka-fu, Japan

Filed Dec. 1, 1971, Ser. No. 203,635
Int. Cl. E04b *1/98*
U.S. Cl. 52—167 **6 Claims**

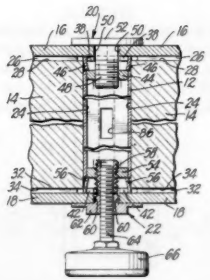


Reinforced bearing walls wherein the reinforcing is at least two steel sheets which have been previously bent, but when mounted are symmetrical along a center line in the bearing wall, and provisions for connecting the bearing walls to other structural members.

3,797,184
PARTITION ASSEMBLY

Richard Thompson, 538 Ridgeway Rd., Lake Oswego, Oreg.

Filed Nov. 29, 1972, Ser. No. 310,216
Int. Cl. E04b *2/76*
U.S. Cl. 52—239 **8 Claims**



A partition assembly including a tubular post, panels respectively having vertical edges engaging opposite sides of

the post, top stringers respectively overlying the upper edges of the panels and respectively having ends interlocked with the tubular upper end of the post, bottom stringers respectively underlying the lower edges of the panels and respectively having ends interlocked with the lower tubular end of the post, an upper screw threaded into a nut in the upper tubular end of the post and clamping the ends of the top stringers to the upper tubular end of the post, and a bottom screw threaded into a nut in the lower tubular end of the post and clamping the ends of the bottom stringers to the lower tubular end of the post. The vertical edges of the panels are spaced apart to provide a gap therebetween and the post is provided with vertically spaced openings accessible through the gap, various shelf or bin units, or the like, carrying hangers which extend through the gap into desired ones of such openings. The hangers are laterally offset from the units so that they can be inserted into the same openings in the post so that the units can be at the same level.

3,797,185

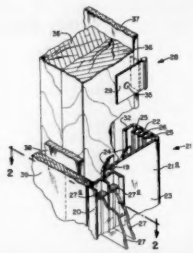
LINER FOR COVERING INTERSECTING SURFACES

Joseph N. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 22, 1971, Ser. No. 191,871

Int. Cl. E04f *19/02*

U.S. Cl. 52—288 **8 Claims**



A liner for covering one of two intersecting surfaces. The liner includes a face for attaching to a wall, a return connected to the face, and a spring connected to the return or to the face.

3,797,186

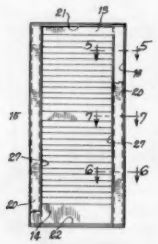
FABRICATED PLASTIC PANELS

Lester L. Smith, Peoria, Ill., assignor to H C Products Co., Princeville, Ill.

Filed Feb. 24, 1970, Ser. No. 13,387

Int. Cl. E06b *7/08*

U.S. Cl. 52—314 **2 Claims**



A panel fabricated from sheet plastic to resemble a wooden louvered shutter or door, one side and the four edges being made as a single sheet. Special box-like plastic extrusions disposed along the sides, in the case of the shutter, and along the sides, top and bottom, in the case of the door, are adhered to the plastic sheet to give rigidity to the sheet and finished panel. The box-like extrusions have a hollow rectangular cross section, with one or more integral webs extending across the section.

3,797,187

DEVICE FOR FIXING PIECES OF JOINERY TO CONCRETE PANELS

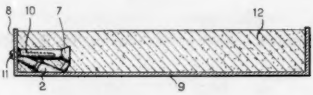
Giuseppe Cennerelli, 8 Cite Jean Gremillon, 93 Bobigny, France

Filed Jan. 6, 1972, Ser. No. 215,840

Claims priority, application France, Jan. 6, 1971, 71.00231

Int. Cl. E04b *1/41*

U.S. Cl. 52—375 **6 Claims**



A device for fixing pieces of joinery to concrete panels, including a tubular member adapted for being embedded in the panel and having two bevelled opening ends, one of said ends opening on the face of the pannel, which supports the piece of joinery, whereas other end opens on the side face of the panel, and an anchoring member at right angles with the said supporting face. The tubular member lodges a securing screw.

3,797,188

BRACKET STRUCTURE FOR ELASTIC EXPANSION GAP SEALING DEVICES

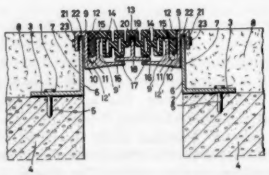
Hans Mansfeld, Heilingenhaus, Germany, assignor to Firma Migua Mitteldeutsche Gummi-und Asbestgesellschaft Hammerschmidt & Co., Heiligenhaus, Germany

Filed Mar. 23, 1972, Ser. No. 237,289

Claims priority, application Germany, Mar. 27, 1971, 2114956

Int. Cl. E04f *15/14;* **E01c** *11/10*

U.S. Cl. 52—396 **5 Claims**



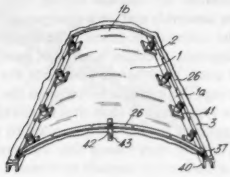
The present bracket means are constructed for supporting an elastic sealing body in an expansion gap, for example, in a floor. Angular sections are preferably attached to the walls of gap forming floor members. Sectional members are attached to the angular sections so that channel forming legs thereof point toward the open face of the gap while a lateral extension of each sectional member points towards the center of the gap. The lateral extension provides a gliding bearing for a support member connected to the sealing body.

3,797,189

LIGHT-WEIGHT ROOFING AND SIMILAR STRUCTURES

Fritz Schnebel, Post Frasdorf, D 8207 Greimelberg 75a, Germany

Filed Jan. 11, 1973, Ser. No. 322,652
Claims priority, application Germany, Jan. 11, 1972, 2201011
Int. Cl. E04b 1/38
U.S. Cl. 52—479 12 Claims



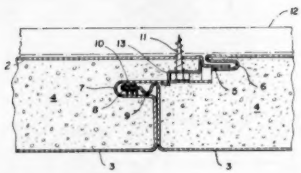
A light-weight roofing or similar structure, particularly for roofing sports grounds, exhibition halls and other large areas, has a generally planar supporting net or network, cover sheets each having a barrel-like curvature, anti-vibration devices securing the straight edges of the cover sheets to the net or network, and sealing strips sealing mutually adjacent curved edges to one another and mutually adjacent straight edges to one another.

3,797,190

PREFABRICATED, INSULATED, METAL WALL PANEL

R. Donald Widdowson, Pittsburgh, Pa., assignor to Elwin G. Smith Division-Cyclops Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1972, Ser. No. 279,469
Int. Cl. E04c 2/13, 2/26
U.S. Cl. 52—595 1 Claim



A prefabricated, insulated, metal wall panel of foamed polyurethane or the like having an exterior metal wall panel portion laterally offset from an interior metal wall portion and so constructed that when identical panels are joined side-by-side by two pairs of male and female detachable fasteners, said panels will remain in spaced insulating relationship, whereby cold or hot outside temperatures will not be conducted from the exterior panels to the interior panels.

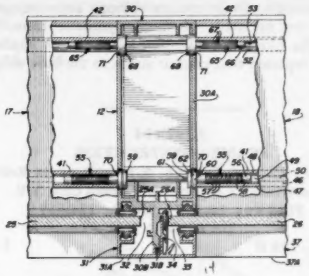
3,797,191

WALL CONSTRUCTION

Ronald D. Sukolics, Elkhart, Ind., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,386
Int. Cl. E04b 2/88
U.S. Cl. 52—664 4 Claims

There is provided an improved wall construction including a vertical mullion assembly and a horizontal member assembly. Both assemblies are formed of interlocking gutter and face sections defining opposed glazing channels. The horizontal member assembly is provided with a pair of longitudinally extending screw splines. The assemblies may be joined in accordance with an improved shear pin system wherein the vertical mullion assembly is prepared for attachment of a horizontal member by drilling holes to receive the head of a shear pin and a dowel pin. The horizontal members are prepared by the insertion of a shear pin into one of the screw splines formed in the horizontal member and by the insertion



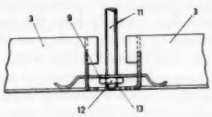
of a dowel pin into the other of the screw splines formed in the horizontal member assembly. The horizontal member is then attached to the vertical by intalling the heads of the shear pin and the dowel pin into the holes previously drilled for them.

3,797,192

GRID CEILING

Martinus Catrinus DeJonge, Hoffemalaan 17, Bilthoven, Netherlands

Filed Mar. 9, 1972, Ser. No. 233,220
Claims priority, application Netherlands, Mar. 31, 1971, 7104323
Int. Cl. E04b 5/52
U.S. Cl. 52—665 5 Claims



A grid ceiling comprising section beams and grids having relatively small dimensions with regard to the dimensions of said grid ceiling, said grids being supported by said section beams which extend in longitudinal and transverse direction and are arranged staggered relative to one another and are suspended in their centre to a stationary support, the section beams which are arranged in one direction having ends supported by beams which are arranged in the other direction and vice versa.

3,797,193

CONCRETE REINFORCEMENT AND METHOD OF AN APPARATUS FOR MAKING SAME

Hans Haller, and Erwin Wendl, both of Graz, Austria

Continuation of Ser. No. 887,110, Dec. 22, 1969, abandoned.
This application July 7, 1972, Ser. No. 269,744
Int. Cl. E04c 5/01
U.S. Cl. 52—669 3 Claims

A succession of concrete-reinforcing rods are fed one by one into an attaching station to which are fed several base strips. The rods are positioned across the base strips and a holding strip is laid over the rod opposite each base strip, and

this holding strip is welded in a loop to the base strip. Thence the strips, with the rod attached, are rolled up, and another rod is connected between them as above. The mat thus formed has a changeable shape since the rods remain slidable between the strips so that they can be longitudinally displaced or wholly removed to fit the mat to virtually any configuration. The strips can be made of metal, synthetic resin, textile, rubber, or the like and the holding strips can be applied as a plurality of separate ties, clips or straps to the base strips over the rods.

3,797,194

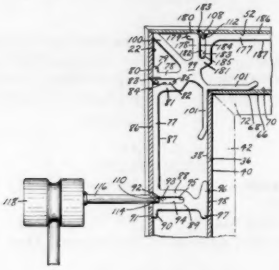
FRAME CONSTRUCTION

Chaim Henry Ekstein, Teaneck, N.J., assignor to Remington Aluminum Window Corporation, Garden City, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,889

Int. Cl. F16b *7/00*

U.S. Cl. 52—758 H **7 Claims**



An improved construction for a frame composed of hollow members, anchored at the corners by means of interior spring members, similar to a gusset. The frame is fastened by pressing one or more lanced lips inwardly from the outer wall of each member of the frame against the spring member and thereby "spring loading" it. The interior forces within the spring tend to return it to its original shape, pressing it against the lanced lip and fastening the corner, insuring a strong permanent joinder.

3,797,195

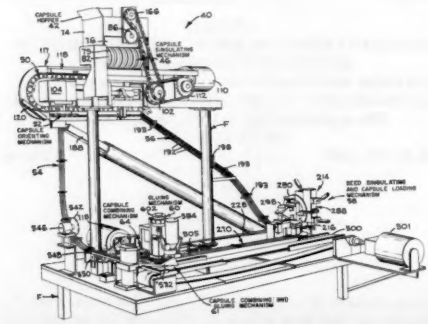
CAPSULE ASSEMBLY METHOD AND MACHINE

Edwin H. Brink, San Jose, and Robert K. Houston, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Apr. 17, 1972, Ser. No. 244,484

Int. Cl. B65b *5/04, 57/00*

U.S. Cl. 53—37 **26 Claims**



Apparatus for assembling seed capsule halves formed of compressed vermiculite with cavities in each half cooperating to receive a seed before the halves are joined. The apparatus includes a roller and hopper assembly for providing a feed row of capsule halves that are randomly oriented. The feed row passes by a rotating probe that pushes capsules whose cavities face away from the probe into a row that forms capsule covers and allows capsule halves whose cavities face the probe to continue on to form a row of capsule bottoms. A vacuum drum singulator deposits seeds individually into the cavities of the capsule bottoms and the latter approach an assembly station that also receives the capsule covers with their cavities face down. At the assembly station a glue pump deposits drops of liquids on the capsule bottoms whereupon the capsule covers are superposed thereon and cam operated pressers squeeze the two parts together to complete the capsule. The conveyor that brings the capsule bottoms to the assembly station operates at a speed higher than that required to match the rate of cover input and means are provided to reject any excess of capsules before they reach that conveyor. The same conveyor also rejects broken capsule bottoms.

3,797,196

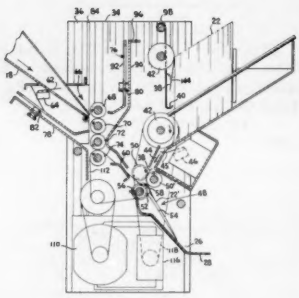
LETTER FOLDER AND ENVELOPE INSERTER

Charles H. Harbison, Birmingham, Ala., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 4, 1972, Ser. No. 311,826

Int. Cl. B65b *57/06, 63/04, 43/22*

U.S. Cl. 53—55 **20 Claims**



A letter folder and envelope inserter is described in a compact housing assembly. Envelopes are automatically removed from a stack and fed to an envelope stuffing station where a rotating roller operative against the upper edge of the envelope pocket opens the pocket. A paper enclosure such as a letter or invoice is automatically folded by passage through pairs of folding rollers and delivered over the pocket opening roller into the envelope pocket. A compact assembly and control system is described for operation of the folder-inserter.

3,797,197

APPARATUS FOR PRODUCING A PACKAGE FOR GROUPS OF FLAT OBJECTS

Rene Fluck, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft Industrieplatz, Neuhausen am Rheinfall, Switzerland

Filed Jan. 16, 1973, Ser. No. 324,121

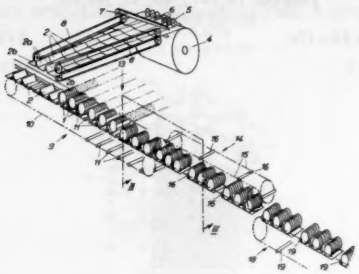
Claims priority, application Switzerland, Jan. 28, 1972, 1245/72

Int. Cl. B65b *5/06, 35/30*

U.S. Cl. 53—156 **6 Claims**

Apparatus for producing a series of package inserts, each insert supporting several rows of crackers, or objects of similar form, and being formed for this purpose to have upstanding dividing walls which delimit chambers holding the individual rows of crackers. The apparatus is composed of a series of

conveyors which sequentially support the insert while maintaining the dividing walls in their desired configuration, permit



rows of crackers to be deposited in the chambers, and move the chambers of each insert close together for final packaging.

3,797,198

AUTOMATIC TWIST WRAPPING APPARATUS

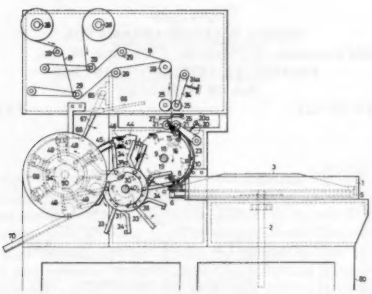
Hiroaki Fukuzaki, Matsubara, Japan, assignor to Tenchi Kikai Kabushiki Kaisha, Sakai, Osaka Prefecture, Japan

Filed Oct. 24, 1972, Ser. No. 300,340

Claims priority, application Japan, Nov. 9, 1971, 46-89262

Int. Cl. B65b *11/28*

U.S. Cl. 53—209 **6 Claims**



An apparatus comprising a first carrier for carrying articles to be wrapped to a predetermined position individually at a regular spacing in a horizontal direction, means for supplying wrappers to the articles brought to the predetermined position so as to position each article approximately at the center of the wrapper, a second carrier adapted to traverse the first carrier horizontally thereof in synchronism therewith to grip the wrappers and articles together and transfer the same to an intermediate path of travel, means disposed in the path of advance of the second carrier for bending the wrappers at the projecting ends thereof other than one end thereof to be twisted, a third carrier having grippers for transferring the wrapped articles gripped by the second carrier from the terminal end of the wrapper bending means to a final path of travel, and means for folding the wrappers and twisting the projecting open ends thereof in the path of advance of the third carrier.

3,797,199

APPARATUS FOR PACKING FRUIT

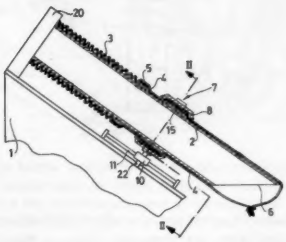
Wolfgang Seifert, Bommersheimerstrasse 7, 6370 Oberursel, Germany

Filed Dec. 11, 1972, Ser. No. 313,743

Claims priority, application Germany, Dec. 16, 1971, 2162545

Int. Cl. B65b *9/16*

U.S. Cl. 53—255 **5 Claims**



Fruit is automatically packed in successive sections of a continuous flexible tube which is mounted on a downwardly inclined supply and guide pipe, the tube having an upper, stored section remote from the lower open end of the pipe. Selectively operable brake shoes are mounted between the stored tube section and the open pipe end for gripping successive tube sections and for moving them in the direction of the open pipe end whereby these sections are drawn from the stored tube section, the brake shoes being selectively operable to engage these sections and to brake them.

3,797,200

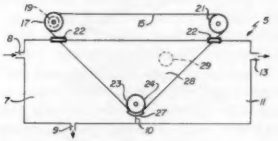
SEPARATION OF METHANE AND NITROGEN MIXTURES UNDER NON-STEADYSTATE CONDITIONS

Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, both of Ill., assignors to Northern Natural Gas Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 135,124, April 20, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,828

Int. Cl. B01d *53/22*

U.S. Cl. 55—16 **5 Claims**



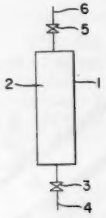
A gas mixture of methane and nitrogen is separated into enriched components under non-steady state conditions wherein nitrogen in the mixture is picked up more favorably by a membrane which is a homopolymer of acrylonitrile, such nitrogen being picked up before the concentration composition of the permeated or absorbed gases reach substantially constant levels.

3,797,201

ABSORPTION PROCESS FOR GAS SEPARATION

Takaai Tamura, No. 5-7, 2-chome Kitano, Mitaka-shi, Tokyo, Japan

Filed Mar. 17, 1972, Ser. No. 235,487
Claims priority, application Japan, Mar. 27, 1971, 46-17619
Int. Cl. B01d *53/04*
U.S. Cl. 55—62 6 Claims



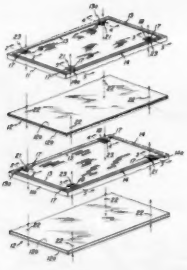
In a process of separating a readily adsorbable gas and a less readily adsorbable gas separately from a mixture of these gases by introducing the gas mixture into an adsorption column containing an adsorbent to adsorb thereon the readily adsorbable gas and then recovering the adsorbed gas by desorbing it under a reduced pressure, the purity of the readily adsorbable gas thus recovered is greatly increased by purging the adsorption column prior to the desorption step with a pure gas having almost the same composition as the adsorbed gas at an almost same pressure as that in the adsorption step. Also, by introducing into the column a pure gas having the same composition as the less readily adsorbable gas prior to the introduction of the gas mixture, the less readily absorable gas is recovered in a high pure state in the above gas recovery process.

3,797,202

MICROPOROUS/NON-POROUS COMPOSITE MEMBRANES

Charles K. Neulander, and William J. Ward, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,670
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 5 Claims



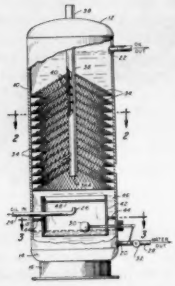
A microporous/non-porous membrane laminate construction is described for incorporation in membrane package construction. One or both sides of the non-porous membrane is covered with a microporous membrane to form a membrane assembly. An exemplary membrane package construction employing the membrane assembly is described.

3,797,203

MEANS FOR SEPARATING HEAVIER FROM LIGHTER COMPONENTS OF COMINGLED FLUID

Forrest Lee Murdock, Sr., Tulsa, Okla., assignor to Fishmaster Products, Inc., Tulsa, Okla.

Filed Oct. 10, 1972, Ser. No. 296,343
Int. Cl. B01d *19/00*
U.S. Cl. 55—176 8 Claims



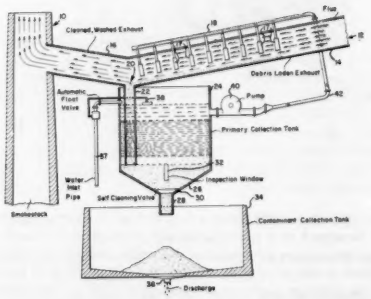
Means for separating heavier from lighter components comingled in fluid including an upright vessel and a plurality of spaced conical separator screens vertically stacked within the vessel arranged such that lighter fluid components flowing through the vessel flow through the screens, each screen being a conically shaped foraminous reticulum of integrally formed relatively small width and small thickness strands, all of which are longitudinally downwardly inclined providing a multiplicity of continuous uninterrupted downwardly inclined paths on which heavier components may travel.

3,797,204

SMOKE WASHER APPARATUS

Dominic Cavatassi, 362 Main St., Follansbee, W. Va.

Filed Nov. 11, 1971, Ser. No. 197,860
Int. Cl. B01d *47/06*
U.S. Cl. 55—227 5 Claims



Smoke washer apparatus which includes a smokestack having an exhaust flue in communication therewith. A series of sprinkler heads is located in the exhaust flue for spraying a curtain of water generally in the direction of the smokestack as that as exhaust passes through the flue, the curtain of water removes particulate and those gases soluble in water. The contaminant-laden water gravitates to a collection tank and the cleaned smoke is directed to the smokestack for emission to the atmosphere. The contaminant is removed from the collection tank and the water recycled to the sprinkler heads.

3,797,205

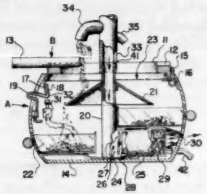
ASH TRAY SMOKE REMOVER

Isaac Weisskopf, 863 44th St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 179,692, Sept. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 24,649, April 1, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 231,896

Int. Cl. B01d *50/00*

U.S. Cl. 55—385 **8 Claims**



An ash tray is combined with an optionally actuable smoking air filter system and ducts adjustable to be moved to the smoke source for sucking in the smoking air.

3,797,206

BINDING DRY SHAVED HAIR SHAVINGS

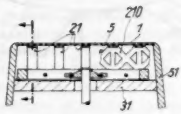
Otta Anna, Niederhochstadt, and Albert Luberichs, Cologne, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Continuation of Ser. No. 27,793, April 18, 1970, abandoned. This application Aug. 31, 1972, Ser. No. 282,593

Claims priority, application Germany, Jan. 14, 1969, 57777

Int. Cl. B03c *3/45*

U.S. Cl. 55—385 **3 Claims**



A d.c. voltage source is connected between the hair dust collecting electrode and the outer grooved or perforated cutting member of the shearing head of a dry shaver. The hair protruding through the grooves of the outer cutting member is polarized into an electric dipole; the projecting hair portion which has opposite polarity than the collecting electrode is subsequently cut off by the movable inner cutting member and is transferred by electrical forces of the field to the collecting electrode. This electrode may be provided with an exchangeable coating of an adhesive.

3,797,207

CROP HARVESTING MACHINE

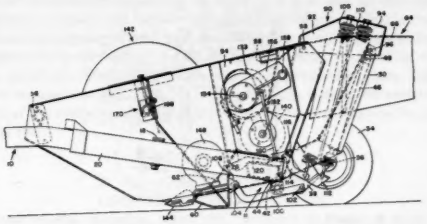
Bobby Gene Sawyer, and J. Clark Fickle, both of Wapello, Iowa, assignors to Deere & Company, Moline, Ill.

Filed July 5, 1972, Ser. No. 268,976

Int. Cl. A01d *43/00*

U.S. Cl. 56—1 **21 Claims**

A crop harvesting machine including a longitudinal frame portion adapted at its forward end for attachment to a draft vehicle, a transverse frame portion fixed at its left end to the rearward end of the longitudinal portion, a pair of upright frame members fixed to opposite sides of the transverse frame portion, a pair of transversely spaced wheel arms connected to the transverse frame portion for vertical swinging movement and having ground-engaging wheels rotatably mounted thereon, extensible and retractable means acting between the upright frame members and the wheel arms to vertically swing the latter and thereby raise and lower the frame relative to the ground, a header subframe carrying crop harvesting elements thereon, the header extending longitudinally above the transverse frame portion and between the upright frame members, upper and lower links mounting the header on the frame, the upper links extending between the header and the upper ends



of the upright frame members and the lower links extending between the header and the wheel arms, and elongated springs acting between the transverse frame portion and the header to urge the latter upwardly relative to the former. In one embodiment, the springs extend between the upper ends of the upright frame members and the header, and in another embodiment, the springs extend between the upper links and the header.

3,797,208

MECHANISM FOR THE AUTOMATIC STEERING OF AGRICULTURAL MACHINES, ESPECIALLY COMBINES

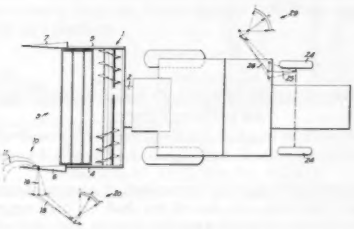
Gilbert J. Strubbe, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed Oct. 21, 1971, Ser. No. 191,303

Claims priority, application Belgium, Oct. 23, 1970, 50546

Int. Cl. A01d *35/02*

U.S. Cl. 56—10.2 **12 Claims**



A mechanism for the automatic steering of agricultural machines, especially combines, comprising a first electrical transducer operatively coupled to an element of the crop edge sensor, a second electrical transducer coupled to a moveable element of the steering means, an electric motor which acts on the steering means, and an electronic reversing means which switches said electric motor such that the position of the aforesaid second transducer is brought into agreement with the position of the aforesaid first transducer.

3,797,209

VARIABLE WIDTH FRONT MOUNTED MOWER

Herbert W. Davis, Box 468-506 E. Baldwin St., Hackettstown, N.J.

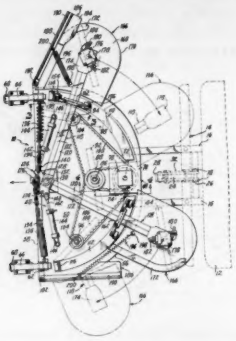
Filed Dec. 29, 1972, Ser. No. 319,677

Int. Cl. A01d *75/30*

U.S. Cl. 56—13.6 **6 Claims**

A mowing apparatus has a main housing adapted for attachment forwardly of a prime mover. The housing supports a

series of blades and drive mechanisms therefor. Arms are pivoted on the main housing and have auxiliary housings with cutting blades thereon, the arms being urged to lateral posi-

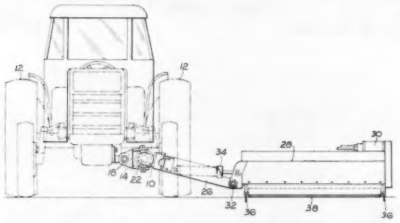


tions and being pivotal to rearward trailing positions when the auxiliary housings encounter an obstruction. Means is provided to purposely move and maintain the auxiliary housings in trailing position when desired.

3,797,210
MOWERS

Anthony Leonard Turner, Alcester, England, assignor to Turner Engineering Company (Coughton) Limited, Coughton, near Alcester, Warwick, England

Filed June 13, 1972, Ser. No. 262,283
Int. Cl. A01d *35/00*
U.S. Cl. 56—15.8 **6 Claims**



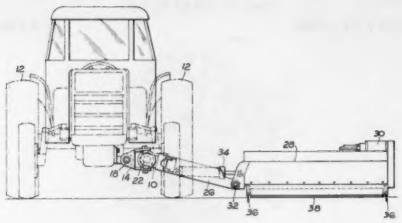
An elongate shaft extends fore-and-aft of a tractor having a bearing for mounting one end of the shaft on the tractor. A first power-driven means is used for rotating such end of the shaft to adjust the angular position of the shaft. A laterally extending arm is fixed to the other end of the shaft, and a mower is povoted to the outer end of the arm. A second power-driven means is used for adjusting the angular position of the mower relative to the arm. The angular position of the shaft and the angular position of the mower are fixed after adjustment by the two power-driven means, and variations in the position of the mower relative to the tractor, to follow undulations of the ground, are accommodated solely by deflection of the shaft.

3,797,211
MOWERS

Anthony Leonard Turner, Alcester, England, assignor to Turner Engineering Company (Coughton) Limited, Coughton, near Alcester, Warwick, England

Filed June 13, 1972, Ser. No. 262,328
Int. Cl. A01d *35/00*
U.S. Cl. 56—15.6 **3 Claims**

A self-contained hydraulically operated mower assembly for detachable mounting on a tractor comprises a body which forms a hydraulic reservoir and which is provided with means for releasably mounting the body on the rear end of a tractor. A shaft has one end rotatably mounted on said body, and the other end is rotatably and releasably supported on a tractor forward of said body. A laterally-extending arm is fixed to said shaft adjacent to said other end of the shaft, and a cutter is

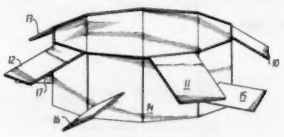


pivoted to the arm for pivotal movement about an axis parallel to the shaft. A hydraulic motor drives the cutter, a first hydraulic ram maintains the shaft in a selected angular position relative to said body, and a second hydraulic ram maintains the cutter in a selected angular position relative to the arm.

3,797,212
COMBINATION MOWING-MULCHING APPARATUS

Oden A. Pursel, 918 Ext. E. 8th St., Bloomsburg, Pa.

Filed Mar. 26, 1973, Ser. No. 344,955
Int. Cl. A01d *35/26*
U.S. Cl. 56—255 **7 Claims**

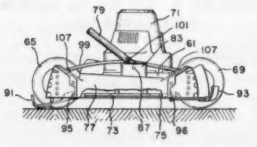


A combination mowing-mulching apparatus in which a generally cylindrical skirt, including at least two sets of fixed mulching blades, are arranged between the cutting blade of a lawnmower and the underside of the housing, concentric with the drive shaft connecting the cutting blade to a prime mower.

3,797,213
COMBINED SAFETY GUARD AND FLIP-OVER HANDLE FOR LAWNMOWERS

Peter Thomas Sadow, Jr., Cockeysville; Thaddeus Eugene Bednarski, Timonium, and Allen George Beares, Towson, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Jan. 2, 1973, Ser. No. 320,065
Int. Cl. A01d *67/00, 55/18*
U.S. Cl. 56—320.1 **15 Claims**



A rotary power-operated lawnmower of the type having a wheel supported deck housing provided with an upstanding

handle pivotally supported on the deck housing for reversal or flip-over movement to facilitate opposite directional, longitudinal movement of the mower without the necessity of turning it around, the mower being provided with a novel safety guard construction pivotally supported on the deck housing and operatively connected with the handle through flexible cable means, or pivoted on the deck and connected directly to the handle, the construction being such that the safety guard is positively pivotally moved by flip-over movement of the handle from either of its operative positions so that it is positioned to protect the operator's feet in both longitudinal directions of movement of the mower and to minimize interference with efficient grass cutting. In addition, the handle is shown as provided with latch means for releasably latching the handle in both of its operative positions.

3,797,214

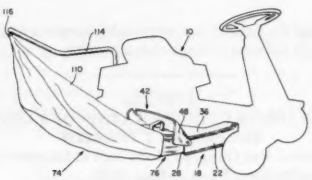
MOWER DISCHARGE CHUTE DEFLECTOR AND BAGGING ATTACHMENT

Leon Paul Erdman, Beaver Dam, and Lee Joseph Wanie, Horicon, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Nov. 10, 1972, Ser. No. 305,475

Int. Cl. A01d *35/26*

U.S. Cl. 56—320.2 **12 Claims**



A rotary lawn mower includes a housing defining a discharge chute, the latter including a hinged outer portion in the form of a deflector or guard. The deflector is biased toward a lowered operative position wherein it acts to intercept and deflect objects thrown at a high trajectory by the mower blade, the deflector also acting to evenly disperse grass cuttings over the ground. The deflector may optionally be raised to an inoperative position wherein it permits a bagging attachment to be installed.

3,797,215

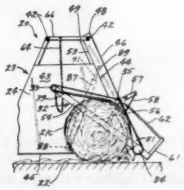
APPARATUS FOR FORMING ROLLS OF HAY

Arnold F. Kopaska, Rural Rt. 4, Guthrie Center, Iowa

Filed Nov. 9, 1972, Ser. No. 305,054

Int. Cl. A01d *75/00*

U.S. Cl. 56—341 **13 Claims**



An apparatus for forming rolls of hay from a windrow of hay lying in a field. A wheeled frame includes sides spaced apart sufficient to pass on either side of the hay windrow. A lift means is mounted to the rear of the frame, being pivotally connected at its upper end and resting at its lower end on the frame, and with means for raising the lift means upwardly and rearwardly about its pivot. A subframe is pivotally secured at its rear end to the lower end of the lift means and is rockably suspended forwardly and between the sides. At least three rollers are mounted in a triangular relationship on the subframe and have a plurality of endless, flexible belts extended longitudinally of the apparatus and trained side-by-side over the rollers. The rear roller, rotated in response to operation of the apparatus, has teeth associated therewith which perform the dual function of beginning to form a roll of hay as the apparatus passes over the windrow while serving to maintain the belts in alignment; and with the subframe pivoting upwardly about the lower end of the lift means as the hay is rolled up as a snowball. When the roll reaches a predetermined size, the lift means is raised, carrying upwardly with it the subframe to clear the roll whereby the apparatus can be moved away from the roll.

3,797,216

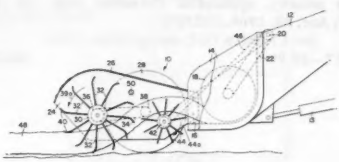
CROP PICK-UP MECHANISM

John Martin Resetich, Silvis, Ill., assignor to Deere & Company, Moline, Ill.

Filed Mar. 2, 1972, Ser. No. 231,107

Int. Cl. A01d *89/00*

U.S. Cl. 56—364 **8 Claims**



A pick-up includes a first finger drum which rotates in a forward direction and at a fingertip speed slightly less than ground speed so that the fingers scoop into the crop and lift the crop at the rear. A second finger drum rotates in a reverse direction and at a higher speed than the first drum to pick up crop material from the first drum and deliver the same rearwardly to a platform.

3,797,217

METHOD AND ARRANGEMENT FOR MAKING SZ-TWISTED CABLES

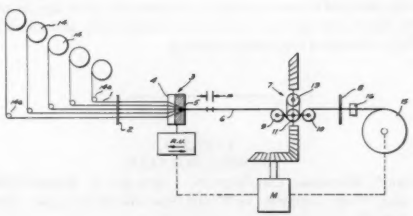
Dieter Braun, Cologne, Germany, assignor to Felten & Guilleaume Kabelwerke Aktiengesellschaft, Cologne, Germany

Filed July 17, 1972, Ser. No. 272,631

Claims priority, application Germany, July 30, 1971, 2138239

Int. Cl. H01b *13/04*

U.S. Cl. 57—34 AT **24 Claims**



An arrangement for making cables and the like comprises an advancing arrangement for advancing an elongated bundle of strands along a predetermined path. A twisting unit positioned along the path twists the elongated bundle of strands in direction circumferentially of its elongation. A first engaging

unit upstream of the twisting unit prevents the twist imparted to the bundle by the twisting unit from travelling upstream along the bundle freely past the first engaging unit, and permits advancing of the bundle along the path and relative to the first engaging unit. A second engaging unit downstream of the twisting unit prevents the twist imparted to the bundle by the twisting unit from travelling downstream along the bundle freely past the second engaging unit, and permits advancing of the bundle along the path and relative to the second engaging unit. At least one of the units is movable in direction along the path. A moving arrangement is provided for continually effecting relative movement between the testing unit and at least one of the engaging units in direction along the path and in a sense varying the degree of twist imparted to the bundle of strands by the twisting unit.

3,797,218

METHOD AND APPARATUS FOR SPINNING SLIVER

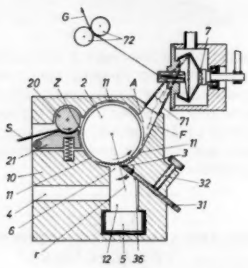
Hans Landwehrkamp; Franz Schreyer, both of Ingolstadt, Germany, and Adolf Schiltknecht, Winterthur, Switzerland, assignors to Schubert Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Mar. 9, 1970, Ser. No. 17,496

Claims priority, application Germany, Mar. 20, 1969, 1914115; Apr. 30, 1969, 1922078

Int. Cl. D01h *7/02*; **D01g** *15/00, 23/00*

U.S. Cl. 57—58.89 **30 Claims**



On its way to a spinning chamber a sliver is opened out to divide it up into individual fibers and is then caused to pass along a path with two parts placed at an angle to each other. Owing to the sudden change in direction as the fibers pass from one part to the other dirt particles, which are denser than the fibers, are thrown out by centrifugal force and leave the fibers through a separating opening.

3,797,219

SPINDLE BOLSTER

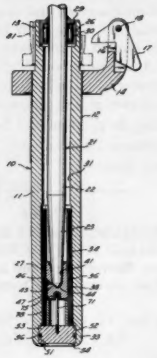
John P. Kieronski, Charlotte, N.C., and Ray C. Johnson, Holden, Mass., assignors to Whitin Machine Works, Inc., Charlotte, N.C.

Filed Mar. 1, 1972, Ser. No. 230,603

Int. Cl. D01h *7/12*

U.S. Cl. 57—135 **5 Claims**

A spindle bolster assembly of the type wherein a spindle blade is resiliently mounted in a bolster case for lateral movement of its lower end with a footstep bearing to minimize vibrational stresses. The footstep bearing is resiliently biased to a centered position by a centering spring anchored to the lower end of the bolster case which additionally axially locates and prevents rotation of the footstep bearing.



3,797,220

METHOD FOR THE TEXTURIZATION OF YARNS, AND THE PRODUCT THEREOF

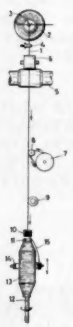
Giorgio Faraci, and Giuseppe Godi, both of Gozzana, Italy, assignors to Bemberg S.p.A., Milan, Italy

Filed Mar. 16, 1971, Ser. No. 124,797

Claims priority, application Italy, Mar. 18, 1970, 22137/70

Int. Cl. D02g *1/02*

U.S. Cl. 57—140 R **6 Claims**

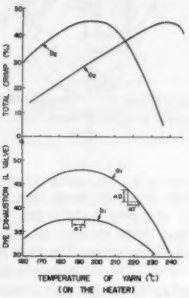


A method and a device for texturing yarns, more particularly synthetic yarns, is disclosed, in which the false twist annular body is made of rubber having a hardness of 70 Shore and over. Advantageously, the yarn is heated, upstream of the false twist annular body, at a temperature well below the melting point of the material forming the yarn. Critical dimensions for the false twist annular body and for the distance therefrom of the tube on which the yarn is wound, are also specified. It is preferred that the yarn be drawn prior to reaching the false twist annular body.

3,797,221
FALSE TWIST-CRIMPED POLYESTER YARNS AND PROCESS FOR THEIR PRODUCTION

Morio Ikeda, and Mamoru Tsumoto, both of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 5, 1971, Ser. No. 131,242
Claims priority, application Japan, Apr. 6, 1970, 45-29236
Int. Cl. D02g *1/02, 3/02*
U.S. Cl. 57—140 R **6 Claims**



A false twist-crimped polyester yarn having a density d of $1.3800 \leqq d \leqq 1.3950$ (g/cm³) and a total percentage crimp (TC) of $TC \geqq 30\%$ is produced by false twisting a polyester multi-filament having a birefringence (Δn) of $0.030 \leqq \Delta n \leqq 0.145$ while heat setting the filament in the twisted state at 160° to 210° at a draft (dr) which satisfies the following equation:

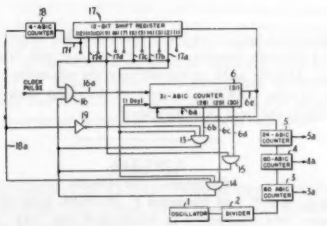
$$-250.\Delta n + 38 \geqq d_r \geqq -150.\Delta n + 17$$

Heat-setting the above false twist-crimped polyester yarn at a higher temperature gives a modified false twist-crimped polyester yarn having a density (d) of $1.3800 \leqq d \leqq 1.3950$ (g/cm³), a total percentage crimp (TC) of $TC \leqq 20\%$, and a torque (Tq) of $Tq \leqq 26(T/25\ cm)$.

3,797,222
DIGITAL ELECTRONIC TIMEPIECE HAVING A PERPETUAL CALENDAR DISPLAY DEVICE

Takashi Kato, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 5, 1972, Ser. No. 295,194
Claims priority, application Japan, Oct. 5, 1971, 46-78115; Oct. 5, 1971, 46/78116
Int. Cl. G04b *19/24*
U.S. Cl. 58—4 A **6 Claims**

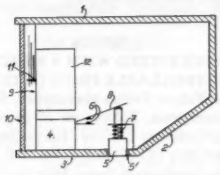


A digital electronic timepiece having a perpetual calendar display device comprises a standard oscillator for producing a pulse signal having a frequency high enough to serve as a time reference base, a divider circuit connected to the oscillator for dividing the pulse signal into a one-second signal having a frequency of one pulse per second, a series of counters, for counting the one-second signals and developing appropriate second, minute and hour signals and applying same to a display panel for displaying the time in seconds, minutes and hours, and a perpetual calendar display device for receiving the signals from the last of the series of counters and automatically and correctly displaying the month and the date of the month. The perpetual calendar display device comprises a day counter for successively delivering a date signal on each successive day, a shift register connected to the day counter for providing an output signal corresponding to each successive month of the year, and electronic circuitry responsive to both the date signals and the signals from the shift register to automatically reset the day counter to commence counting at the first day and to shift the register to the proper month. A display panel receives the date signals from the day counter and the month signals from the register and displays the correct month and date of the month.

3,797,223
ALARM CLOCK

Lucio Oliveri, Milan, Italy, assignor to Cohel Compagnie de Horlogerie et Electronique S.A., Roveredo, Switzerland

Filed Nov. 15, 1972, Ser. No. 306,953
Claims priority, application Switzerland, Dec. 10, 1971, 18005/71
Int. Cl. G04b *13/00*
U.S. Cl. 58—21.15 **5 Claims**

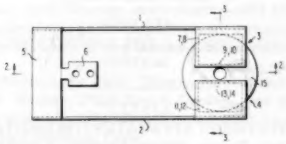


An alarm clock has an alarm device which can be set in an operative or an inoperative condition by tilting the clock from one stable rest position to another.

3,797,224
COMPENSATION OF THE THERMAL FREQUENCY DRIFT OF A MECHANICAL OSCILLATOR FOR TIMEKEEPING

Robert Favre, Lausanne, Switzerland, assignor to Fabriques Movado, La Chaux-de Fonds Canton, Neuchatel, Switzerland

Filed July 26, 1971, Ser. No. 166,060
Claims priority, application Switzerland, Aug. 4, 1970, 11700/70
Int. Cl. G04c *3/00*; **H02k** *33/00*
U.S. Cl. 58—23 TF **6 Claims**



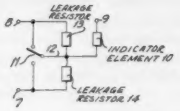
A system for compensation of the thermal frequency drift of a mechanical oscillator for timekeeping, wherein the compensating effect is obtained by interaction of magnets fixed to the oscillator, such magnets having a thermal coefficient of negative character. A secondary compensating effect is obtained by means of magnetic shunts associated with said magnets, such shunts having a Curie-point at a suitable temperature.

3,797,225

DRIVING ARRANGEMENT FOR PASSIVE TIME INDICATION DEVICES

Tetsuro Hama, and Izuhiko Nishimura, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Siekosha, Tokyo, Japan

Filed Feb. 28, 1972, Ser. No. 232,461
Claims priority, application Japan, Feb. 27, 1971, 46–9804
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **5 Claims**



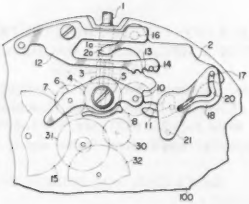
A driving arrangement for passive time indication devices wherein a passive indication device is connected between the output terminal of a double throw-type switching element and a terminal having a first potential such that the difference between said first potential and a second potential applied to the output terminal of said switching element when said switching element is in a first position is sufficient to excite the passive time indication device while the difference between said first potential and a third potential applied to said switching element output terminal when said switching element is in a second position is less than the threshold voltage of the passive time indication element.

3,797,226

TIMEPIECE FITTED WITH A REGULATOR CONTROLLABLE FROM OUTSIDE

Kazuyoshi Inoki, Tokyo; Testuo Mastumura, Saitama-ken, and Katsuhiko Komiyama, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,552
Claims priority, application Japan, May 16, 1972, 47–047691; May 16, 1972, 47–047692; Mar. 31, 1973, 48–037147; Mar. 31, 1973, 48–037148; Mar. 31, 1973, 48–039164; Apr. 19, 1973, 48–44470
Int. Cl. G04b *27/02*
U.S. Cl. 58—67 **4 Claims**



A watch having a regulator-adjusting mechanism from a winding and time-settable stem operable from outside of the watch movement, the mechanism being provided with specific resisting means against manual pull of the stem to its regulator-adjusting position.

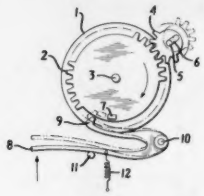
3,797,227

TIME ADJUSTMENT APPARATUS FOR DIGITAL CLOCK

Kitoshi Kitai, Tokyo; Mitsuo Koyama, Yotsukaido; Shogo Kato, Kichioka; Yozuru Takazawa, Tokyo, and Shinji Nagaoka, Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,689
Claims priority, application Japan, Nov. 19, 1971, 46–92911
Int. Cl. G04b *27/00, 19/02*
U.S. Cl. 58—85.5 **3 Claims**

Apparatus for making time adjustments or corrections in a digital clock having a plurality of time-indicating driven elements, one of which indicates the least time unit in the clock, for example, seconds. A pawl lever having a pawl for engaging a stop on the driven seconds wheel for indicating the least time units is manually actuated to stop this seconds wheel after a correct time has been set in the hours, tens of minutes and minutes time-indicating wheels. Upon release of the seconds wheel, the time is correctly and accurately set in the clock including correct time as to the least time unit. The seconds wheel is stopped by engaging it and using its force of rotation to disengage an input drive element therefrom or to open a switch disenabling a drive motor. The pawl lever is released at the time of a time signal. The seconds wheel is releasably held at a given position of rotation thereof corresponding to a given time indication when making the time correction or setting.

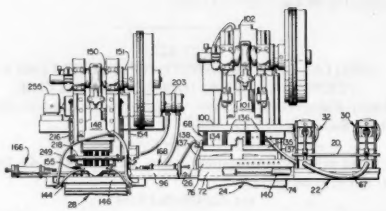


3,797,228

ARTICLE MAKING MACHINE AND METHOD

Max B. Kirkpatrick, deceased, late of Anchorage, Alaska (by Mildred E. Kirkpatrick, executrix); Andrew G. Harvey, and Roger H. Erichsen, both of Wickenburg, Ariz., assignors to Alaska General Credit Corporation, Anchorage, Alaska

Filed Oct. 26, 1971, Ser. No. 192,147
Int. Cl. B21k *15/02*
U.S. Cl. 59—37 **22 Claims**



Method and apparatus for making articles by passing stock material through heating, contour forming, and final shaping stations. Articles such as horseshoes are advantageously subjected to the combined steps of bending and nail hole punching at the final shaping station.

3,797,229

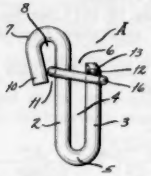
CONNECTOR HOOK

Robert C. Rueff, and Herschel E. Woltzen, both of St. Louis County, Mo., assignors to Nixdorff-Krein Mfg., St. Louis, Mo.

Filed Sept. 25, 1972, Ser. No. 291,568
Int. Cl. F16g *17/00*
U.S. Cl. 59—93 **10 Claims**

A connector link for engagement with separate chains or selected links of the same chain, having a pair of parallel legs with an intervening opening; the same being closed at one end by means of a bight portion extending between the adjacent

ends of the legs and being normally open at its other end to permit engagement with a chain link. Provided for extension



across the opening is a keeper link, embracing each of the legs for restraining the same against parting under applied forces.

3,797,230

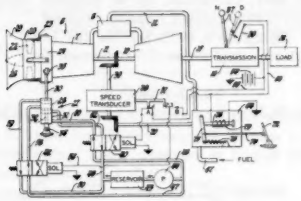
CONTROL METHOD AND APPARATUS FOR A SINGLE SHAFT TURBINE WITH PREWHIRL OF AIR ENTERING THE COMPRESSOR

Charles A. Amann, Bloomfield Hills, and Erik H. Rucins, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 194,116, Nov. 1, 1971, Pat. No. 3,688,605, which is a division of Ser. No. 854,651, Sept. 2, 1969, Pat. No. 3,657,881. This application Aug. 9, 1972, Ser. No. 279,200The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.

Int. Cl. F02c 9/14

U.S. Cl. 60—39.03 **4 Claims**



A vehicle turbine propels the vehicle through a change-speed transmission. To reduce vehicle acceleration time with an acceptable penalty with respect to fuel consumption, the compressor of the engine has variable inlet guide vanes which are shifted into a positive prewhirl angle at idling speeds when the transmission is shifted into a drive condition. Thus the engine has a low speed idle, with axially oriented guide vanes and normal air entrance, when the transmission is in neutral or park, and a high speed idle with positive prewhirl when the transmission is in a drive condition. Also, the vanes are shifted at full speed of the engine to provide negative prewhirl and thus reduce the engine speed corresponding to maximum power output. Because of the higher idle and lower maximum speeds, the acceleration time of the turbine is reduced.

3,797,231

LOW EMISSIONS CATALYTIC COMBUSTION SYSTEM

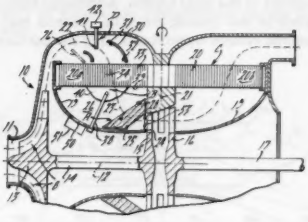
Arthur F. McLean, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 31, 1972, Ser. No. 276,875

Int. Cl. F02c 7/10

U.S. Cl. 60—39.51 H **9 Claims**

In a continuous combustion, regenerative, gas turbine engine, supply of compressed air is divided so that a portion thereof can be mixed with fuel to support a local flame on the surface of a heat exchanger through which all portions of the flow pass to be combusted. The flame brings the temperature of the flow up to a predetermined operating range for support-



ing catalytic combustion and at which time the local flame is extinguished.

3,797,232

VEHICLE GAS TURBINES WITH RATIO COUPLINGS THEREBETWEEN-THEREFOR

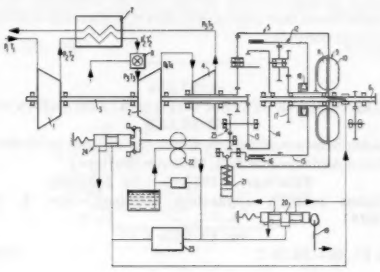
Dieter Muller, Stuttgart, and Wilhelm Jurisch, Nellingen Kr. Esslingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Division of Ser. No. 121,956, March 8, 1971, Pat. No. 3,744,241. This application Apr. 5, 1973, Ser. No. 348,079

Claims priority, application Germany, Mar. 6, 1970, 2010581

Int. Cl. F02c 3/10

U.S. Cl. 60—39.16 R **7 Claims**



Gas turbine unit for motor vehicles in which the compressor turbine is selectively connected to the output shaft through a controllable fluid coupling so as to provide a transfer of power to the output shaft from the compressor turbine during partial-load operation and a transfer of power from the output shaft to the compressor turbine during braking.

3,797,233

INTEGRATED CONTROL FOR A TURBOPROPULSION SYSTEM

William L. Webb, Lake Park; Thomas R. Warwick, Jupiter; Ronald D. Hackey, Palm Beach Garden, and Robert L. Price, Tequesta, all of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

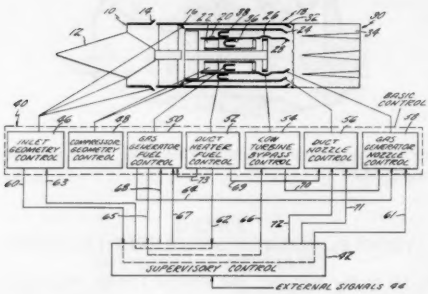
Continuation of Ser. No. 138,163, April 28, 1971. This application June 28, 1973, Ser. No. 374,611

Int. Cl. F02c 9/04, 3/06

U.S. Cl. 60—39.16 R **15 Claims**

An integrated turbopropulsion system is disclosed consisting of a variable air induction system, a turbine engine and an exhaust nozzle/ejector. Control of the total system is provided by a plurality of basic control systems consisting of separate controls for each individual system variable. A supervisory

control receives inputs from selected basic controls and from external signals, and provides additional inputs to the basic controls to permit the basic controls to increase the performance of the turbopropulsion system and to extend the control envelope of the total system. Additional basic controls may be added to the system, or basic controls may be subtracted from the system without affecting the performance of



the entire turbopropulsion system. Novel basic controls for individual system variables are disclosed, as well as a novel integrator lockout control and a novel variable rate control. As a result of the intercommunication between individual basic controls provided by the supervisory control, the entire integrated turbopropulsion system may be controlled to more stringent limits than can be provided by a plurality of independent basic controls.

3,797,234

GAS TURBINE SYSTEM WITH SUBTERRANEAN AIR STORAGE

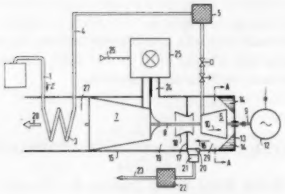
Theodor Schwarz, Erlangen, Germany, assignor to Kraftwerke Union Aktiengesellschaft, Mulheim, Germany

Filed Apr. 5, 1972, Ser. No. 241,299

Claims priority, application Germany, Apr. 6, 1971, 2116851

Int. Cl. F02c *3/10*

U.S. Cl. 60—39.18 C **7 Claims**



In a gas turbine system with subterranean air storage such as in a cavern formed in a salt stratum, a hot-air decompression turbine stage for partially decompressing combustion air stored at high pressure, prior to the entry thereof into the combustion chamber of the gas turbine proper, after the combustion air has been delivered by suitable conducting means to a location at which it is heated by the exhaust gases of the gas turbine to a temperature below the melting temperature of any salt particles that may be present in the stored air.

3,797,235

FUEL INJECTION APPARATUS FOR AUTOMOTIVE VEHICLES USING GAS TURBINE POWER PLANTS

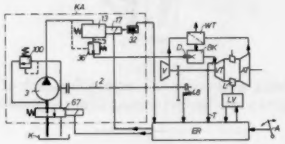
Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 10, 1971, Ser. No. 170,582

Claims priority, application Germany, Aug. 27, 1970, 2042541

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 R **16 Claims**



In a fuel injection apparatus particularly adapted to be associated with a gas turbine constituting the power plant of an automotive vehicle, there is provided an electromagnetically operated fuel metering valve, the fuel quantity control member of which is directly connected with the armature of an electromagnet supplied with electric current as a function of independent (arbitrary) and dependent operational variables.

3,797,236

ANNULAR COMBUSTION CHAMBER WITH CERAMIC ANNULAR RING

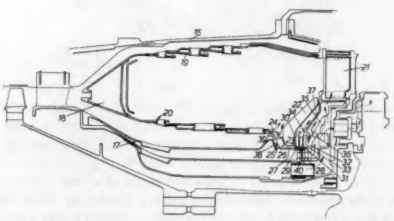
Noel Harry Hooke, Etwall; Thomas Steel, Littleover, and Jack Raymond Bird, Chellaston, all of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed June 8, 1972, Ser. No. 261,110

Claims priority, application Great Britain, June 11, 1971, 27471/71

Int. Cl. F02c *7/20*

U.S. Cl. 60—39.31 **14 Claims**



An annular combustion chamber for a gas turbine engine in which an annular wall part is made of a ring of ceramic material which is located in the chamber by compression between a frusto-conical first face and a second face which is radial or frusto-conical.

3,797,237

INTERNAL COMBUSTION ENGINE HAVING TWO PISTONS ROTATABLE THROUGH SEPARATE INTERSECTING CIRCULAR PATHS

Minoru Kamiya, 2-46-3, Minamiotsuka, Toshima-ku, Tokyo, Japan

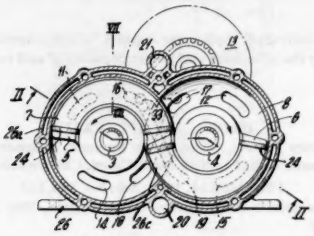
Filed Dec. 30, 1971, Ser. No. 214,293

Int. Cl. F02g *3/00*

U.S. Cl. 60—39.61 **10 Claims**

An internal combustion engine comprises a cylinder in the general form of a 'Figure eight,' and comprises two engine

cylinder portions, for example, of toroidal form arranged side by side and interconnected centrally so that the toroids intersect at an intermediate portion common to both. Pistons are centrally rotatably mounted in each associated cylinder portion and operate through a path which moves them through the associated adjacent cylinder portion. The pistons are timed for rotation at a substantially 180° phase difference so that they alternately and cyclically run through the common intermediate portion. The cylinders advantageously rotate with parallel arranged shafts interengaged by appropriate gearing to provide for the necessary phase difference operation. The construction includes a rotary valve for timing the opening and closing of inlet and outlet ports which are connected to the respective cylinder parts and which regulate the inlet air flow from a compressor and the exhaust of gases from the cylinder. Each cylinder part is provided with a port which leads to a small sized combustion chamber and the rotation of the pistons is such that the fuel and gas mixture is directed into each combustion chamber during each revolution, where it is ignited in the chamber and the compressed combustion gases are directed outwardly behind the pistons to provide the driving power.



3,797,238

SOLID HYPERGOLIC PROPELLANT SYSTEMS

Bernard L. Iwanciow, Sunnyvale, and William J. Lawrence, San Jose, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 4, 1965, Ser. No. 461,555
Int. Cl. C06d *5/06*
U.S. Cl. 60—219 **8 Claims**

Hypergolic solid oxidizer and fuel systems are provided whereby ignition and combustion of the separate solid fuel and oxidizer grains can be obtained by contacting of the respective grains. Suitable solid oxidizers include $NOBrF_4$, $LiClO_4 \cdot NOF$, $MgClO_4 \cdot 2NOF$, NO_2ClO_4, NO_2BF_4, $(NO_2)_3(AlClO_4)_6$, NO_2AsF_6, NO_2SbF_6, and NO_2PF_6. Suitable solid fuels include $LiAlH_4$, $LiBH_4$, Li_2AlH_5, BeH_2, $LiH \cdot BeH_2$, tetramethylammonium hydrotriborate, triaminoguonidinium diazine, diaminotetrazine, 4-amino-3, 5-dihydrazine-1,2,4-triazole, $N_2H_4(BH_3)_2$, μ-(hydrazino)decaborane, 3,6-dihydrazine-s-tetrazine, NH_4N_3, $(CH_3)_4NB_3H_8$ and borane complexes with ammonia such as $B_{10}H_{12} \cdot 2NH_3$.

Completely fluorinated polyethylene resin is a suitable binder for the oxidizer system.

3,797,239

SUPERSONIC COMBUSTION ENGINE

George F. Hausmann, Glastonbury, Conn., and Arthur W. Blackman, Cambridge, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 24, 1965, Ser. No. 504,706
Int. Cl. F02k *3/00*
U.S. Cl. 60—268 **1 Claim**

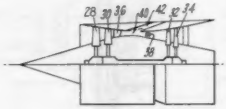
1. An airbreathing turbine-type powerplant comprising:

a supersonic convergent inlet having a throat in which air flows at supersonic velocity,

a plurality of counterrotating supersonic impulse rotors located at the throat of said inlet whereby the air is accelerated and discharged at supersonic velocity

means for driving said rotors,

a plurality of supersonic straightening stators downstream of said rotors,



means for injecting fuel into said supersonic airstream through said supersonic straightening stators,

a fixed, annular supersonic diffuser downstream of said stators,

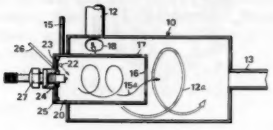
and a combustion chamber downstream of said fuel injecting means for combusting said fuel-air mixture at supersonic velocities.

3,797,240

EXHAUST EMISSION CONTROL DEVICE

Tokuta Inoue, and Shunzo Yamaguchi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken and Nippon Denso Kabushiki Kaisha, Kariya-shi, both of, Japan

Filed Feb. 2, 1972, Ser. No. 222,900
Claims priority, application Japan, June 2, 1971, 46-38824
Int. Cl. F01n *3/14*
U.S. Cl. 60—303 **5 Claims**



This invention relates to an exhaust emission control device. A vortical combustion chamber extends into an oxidation reaction chamber so that the exhaust gases introduced into the oxidation reaction chamber through the exhaust manifold may be brought into direct contact with the outer wall surfaces of the vortical combustion chamber.

3,797,241

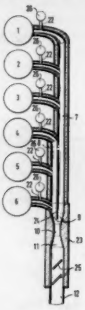
APPARATUS FOR CONTROLLING THE EXHAUST EMISSIONS FROM INTERNAL COMBUSTION ENGINES

Herbert Kern, Lerchenstr. 46, 7272 Altensteig, Germany

Filed Aug. 9, 1971, Ser. No. 169,937
Claims priority, application Germany, Dec. 9, 1970, 2060630
Int. Cl. F02b *27/04*; **F01n** *3/10*
U.S. Cl. 60—305 **16 Claims**

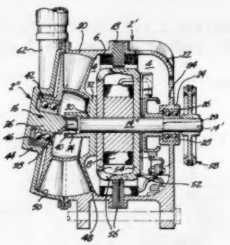
An improved apparatus for controlling exhaust emissions and reducing the poisonous components in exhaust gases from multi-cylinder reciprocating and rotary piston internal combustion engines which utilizes the introduction of secondary air into the exhaust gases to further combustion thereof. A pair of exhaust collecting conduits are provided and coupled to a pulse converter which includes an inlet nozzle, a mixing

tube and diffuser section. At least a portion of the pulse converter is thermally insulated so as to provide a thermally insu-



lated reaction section wherein the exhaust gases from the engine are further reacted to control the emissions.

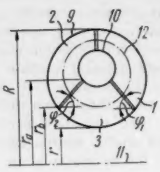
3,797,242
UNIFIED SMOG PUMP AND ALTERNATOR
Meredith E. Bowdish, P.O. Box 2011, Anchorage, Alaska
Filed June 2, 1972, Ser. No. 259,142
Int. Cl. F01n *3/10*; **H02k** *9/06*
U.S. Cl. 60—307 **13 Claims**



The unit is employed with a combustible fuel driven engine, and comprises a casing defining a chamber having an operatively driven shaft rotatably mounted therein, and a rotary electric winding and a pump rotor fixed end to end of one another on the shaft in the chamber. The rotor and the winding are closed to one another, at one end portion thereof, within a circle centered about the shaft, and there are means about the circle in the chamber, forming a rotary seal with the one end portion, so that the portion of the chamber occupied by the rotor is segregated from that occupied by the winding, in a fluid-tight manner. There are also means cooperating with the rotor to intake and discharge air to the exhaust system of the engine, from the portion of the chamber occupied by the rotor during the rotation of the shaft, and means cooperating with the winding to generate an electric current flow to the engine ignition system, during the intake and discharge of the air from the chamber.

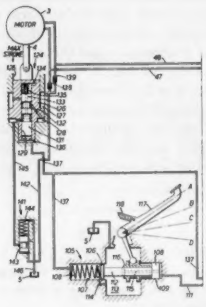
3,797,243
HYDRAULIC TORQUE CONVERTER
Sergei Mikhailovich Trusov, 11 Parkovaya, 44, Korpus 4, kv. 28, Moscow, U.S.S.R.
Filed July 7, 1972, Ser. No. 269,781
Claims priority, application U.S.S.R., July 8, 1971, 1679758
Int. Cl. F16d *33/20*
U.S. Cl. 60—361 **10 Claims**

A hydraulic torque converter is disclosed with a wide passage area and specially selected parameters of the blading



of the individual converter wheels which increases considerably the efficiency and power capacity of said converter.

3,797,244
HYDRAULIC APPARATUS
John Henry Waters, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, Arley Court, Cheltenham, England
Filed May 24, 1971, Ser. No. 146,105
Claims priority, application Great Britain, May 26, 1970, 25156/70
Int. Cl. F15b *15/18*
U.S. Cl. 60—443 **15 Claims**

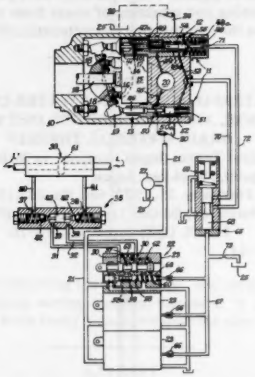


A hydraulic control system comprising a master piston-and-cylinder unit adjustable by a main control member to displace liquid, a plurality of slave piston-and-cylinder units hydraulically connected to the master cylinder to displace liquid and intended for connection to a plurality of subsidiary control members, and mechanical means such as springs, operative as liquid is displaced from the master piston-and-cylinder unit to cause movement of the slave units in a desired sequence. The control system may be combined with a hydraulic power transmission comprising a fixed positive displacement pump and a variable positive displacement motor, a first slave piston-and-cylinder unit being arranged to adjust motor displacement and a second slave piston-and-cylinder unit being arranged to control a variable by-pass for selectively by-passing a proportion of pump delivery such that continuous adjustment of the main control member will sequentially adjust the variable by-pass and motor displacement.

3,797,245
DUAL RANGE PRESSURE DEPENDENT VARIABLE FLOW FLUID DELIVERY SYSTEM
Arthur J. Hein, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,855
Int. Cl. F16h *39/46*
U.S. Cl. 60—452 **9 Claims**

Using a variable displacement pump as a source of pressurized fluid in a pressurized fluid delivery circuit, the dis-

placement of the pump can be controlled by pressure in the fluid delivery circuit over a first pressure compensated range when work circuits connected thereto are capable of being operated within the first pressure range and also at a second



higher pressure compensated range if any work circuit requires a higher pressure by using the pressure above a preselected value in the work circuit to change the range pressure compensation to a higher level through adjustment of control components.

3,797,246

MULTI-CIRCUIT BRAKE SYSTEM

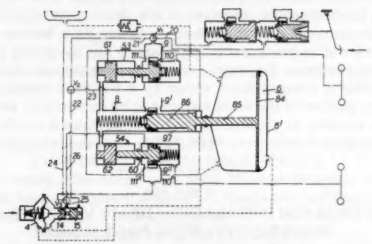
Juan Belart, Walldorf; Hans-Albert Beller, Bad Vilbel, and Jochen Burgdorf, Offenbach, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,737

Claims priority, application Germany, Oct. 30, 1971, 2154229

Int. Cl. F15b *7/00*

U.S. Cl. 60—555 **3 Claims**



This relates to a power assisted multi-circuit brake system. The brake system includes a primary multi-circuit master cylinder, an intermediate master cylinder for each brake circuit, a brake booster common to each intermediate master cylinder and a control valve for the brake booster. As disclosed herein a single compact structural unit of reduced axial length is provided including the intermediate master cylinders and the brake booster. This is accomplished by placing the intermediate master cylinders and the brake booster in a parallel relationship with respect to each other in the compact structural unit. A single brake fluid reservoir can be employed for the intermediate master cylinders and the brake booster because the intermediate master cylinders are oriented with respect to the brake booster so that the intermediate master cylinder stroke is opposite to the brake booster stroke.

3,797,247

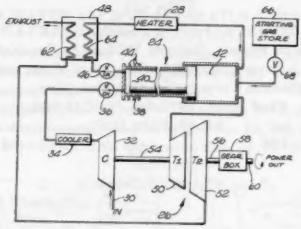
COMPOUND BRAYTON-CYCLE ENGINE

Everett H. Schwartzman, 724 Cloyden Rd., Palos Verdes Estates, Calif.

Filed Aug. 10, 1972, Ser. No. 279,552

Int. Cl. F01k *3/18*

U.S. Cl. 60—59 T **10 Claims**



A system is disclosed incorporating a reciprocating-piston compressor and drive arrangement for converting a portion of the heat of a working fluid to attain a pressure increase, with the resulting working fluid supplied to a turbine. As disclosed, the reciprocating structure is a free-piston engine with the compressor piston and drive-engine piston an integral structure. The housing of the free-piston structure incorporates cooling structure, for example so that the reciprocating compressor may approach isothermal operation. As disclosed, working fluid is heated to drive the free-piston engine, exhausting to drive the turbine which supplies mechanical output power. Also as disclosed, the turbine drives a rotary compressor or supercharger, which supplies intake fluid to the free-piston compressor, the output of which supplies the heater.

3,797,248

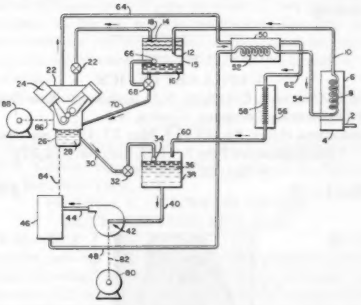
RANKINE CYCLE START UP SYSTEM

Walter H. Witzel, Sudbury, and Edward F. Doyle, Dedham, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed , Ser. No. 210,749

Int. Cl. F01k *25/08, 27/00*

U.S. Cl. 60—36 **4 Claims**



In the starting mode of a closed cycle system, after a period of quiescence, a mixture of working fluid and lubricant is extracted from portions of the system, according to the need for fluid in the cycle, and transmitted into a reservoir where it provides a small pressure head to a starting mode pressurization pump and also provides working fluid for the starting mode. During the starting mode, the prepressurization pump is activated to maintain the static pressure of the fluid exiting

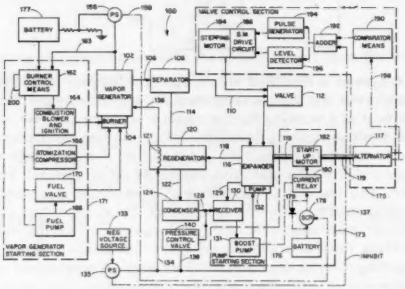
through it above its vapor pressure, before it is further pressurized. The mixture is later heated at least to a point where the working fluid is vaporized. The lubricant is removed from the working fluid in a liquid state before the working fluid is recondensed, by a gravity or screen separator. The separated working fluid is retained in the cycle, while the separated lubricant is returned to the point from which it was extracted.

3,797,249

AUTOMATIC VAPOR ENGINE START-UP

Constantine D. Pezaris, Nahant; William P. Tegan, Billerica, and Paul J. Trame, South Hamilton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 6, 1972, Ser. No. 215,898
Int. Cl. F23n *1/10*
U.S. Cl. 60—106 **23 Claims**



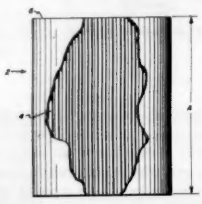
An automatic start-up system for a Rankine cycle engine provides start-up from a single actuation; for example, the closing of a switch. The start-up system initiates operation of a vapor generator for vaporizing working fluid which is admitted to an expander to produce work and a pumping system which supplies working fluid in the liquid state to the vapor generator. When the vaporized working fluid from the vapor generator begins to operate the expander at a predetermined running speed, the start-up system is deenergized to terminate start-up operation. The engine then continues in a running mode. The engine may have a valve between the vapor generator and the expander for controlling admission of vaporized working fluid to the expander. When such a valve is present, a control means responsive to an appropriate engine operating condition is provided for establishing the proper valve setting.

3,797,250

CAPILLARY DEVICE

Gerard P. Canevari, Cranford, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 40,923, May 27, 1970, abandoned.
This application Feb. 7, 1972, Ser. No. 224,219
Int. Cl. E02b *11/00*
U.S. Cl. 61—10 **2 Claims**



A device for sorbing large amounts of liquid by capillary action. The device comprises a multiplicity of cylindrically shaped particles. Each particle comprises a plurality of capillary sized passageways which run the length of the particle. The particles each sorb an amount of liquid, by capillary action, equal to the volume of the capillary passageways. The particles may be used in any application requiring the sorption and retention of liquids. These particles have particular application to sorbing and retention of water from muddy soils so as to improve the load-bearing characteristics of the soil.

3,797,251

DRAIN MATERIAL FOR USE IN A WATER-CONTAINING POOR SUBSOIL AND A METHOD FOR INSTALLING SAID DRAIN MATERIAL THEREIN

Teruo Shimizu, Tokyo, Japan, assignor to Kabushiki Kaisha Kumagaigumi, Fukui-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,154
Claims priority, application Japan, Aug. 31, 1971, 46/66279
Int. Cl. E02b *11/00*; **E02d** *3/10*
U.S. Cl. 61—11 **7 Claims**

There are disclosed a drain material and a method of installation thereof, in which a column-shaped or rod-shaped drain member of an extremely light and continuous cellular foamed synthetic resinous material is used as a drain material for withdrawing water from the water-containing poor subsoil to improve the strength or condition of the soil, thereby providing convenience for transportation and simplicity in working. For facilitating the insertion of the drain member into the water-containing poor subsoil, a casing pipe having a lid member at its lower end is employed. When the casing pipe is withdrawn from the water-containing poor subsoil, the drain member is pressed down either by a weight secured to the lower portion of the drain member or by compressed air pressure thereon to prevent upward shifting caused by the frictional force between the drain member and the casing pipe.

3,797,252

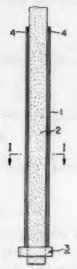
METHOD FOR INSTALLING A DRAIN MATERIAL IN A WATER-CONTAINING POOR SUBSOIL

Motoo Ohtsuka, Tokyo, Japan, assignor to Kabushiki Kaisha Kumagaigumi, Fukui-shi, Fukui-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,156
Claims priority, application Japan, Sept. 1, 1972, 47-66594
Int. Cl. E02b *11/00, 13/00*
U.S. Cl. 61—11 **3 Claims**

Drain material formed into a column-shaped or rod-shaped member of an extremely light continuous cellular foamed synthetic resinous material is used for withdrawing water from a water-containing poor subsoil to improve the strength or condition of the soil. For facilitating the insertion of the drain member into the subsoil, the drain member is inserted within a casing pipe prior to installation. A stopper which engages the lower end face of the casing pipe is secured to that lower portion of the drain member which extends downwardly from the lower end of the casing pipe. When the casing pipe, within

which the drain member is accommodated, is driven into subsoil, the stopper functions to prevent the drain member from being shifted upwardly by resisting the lifting through the soil,



at the stage of removing the casing pipe, said stopper utilizing the soil resistance acting thereon, functions to prevent the drain member from being withdrawn with the pipe.

3,797,253

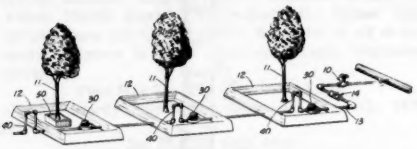
AUTOMATIC IRRIGATION SYSTEM

Chester C. Rodieck, 1596 W. Mells Ln., Anaheim, Calif.

Filed Jan. 10, 1972, Ser. No. 216,576

Int. Cl. E02b *13/00*

U.S. Cl. 61—12 **10 Claims**



The irrigation system is comprised of a plurality of valves with each valve connected by means of piping to a pressurized water source. Each item to be watered is provided with a well around its base and at least one valve is positioned within each of the wells. One or more risers, of preselected height, are provided in said piping so as to force each valve that has been closed, by the water reaching a preselected height in the well, to remain closed for so long as there is water pressure applied to the system.

3,797,254

CONSOLIDATION OF ROCK STRATA

Arthur Askey, Doncaster, and John Michael Murphy, Mansfield, both of England, assignors to Explosives and Chemical Products Limited, London, England

Filed Feb. 28, 1972, Ser. No. 229,844

Claims priority, application Great Britain, Mar. 1, 1971, 5729/71

Int. Cl. E21d *21/00*

U.S. Cl. 61—45 B **10 Claims**

The consolidation of friable rock strate found in, for example, underground roadways and tunnels encountered in mining and civil engineering is effected by the use of a hollow tubular reinforcing member having enlarged end portions in a borehole having a diameter which is at least 4 mm. greater than that of the unenlarged portion of the reinforcing member. It is possible to install such reinforcing members using relatively simple hand-held drilling machines, and to provide the reinforcing member with an inner calibrated rod capable of indicating an increase in stress within the tubular member.

3,797,255

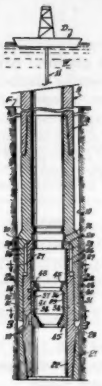
UNDER-WATER ANCHOR APPARATUS AND METHODS OF INSTALLATION

Archer W. Kammerer, Jr., Fullerton, Calif., and Gary R. Johnson, Houston, Tex., assignors to Baker Oil Tools, Inc., Commerce, Calif.

Continuation of Ser. No. 132,993, April 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 23,700, March 30, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,648

Int. Cl. E02d *5/54*

U.S. Cl. 61—46 **35 Claims**



An anchor forms part of a drill pipe string secured to a drill bit that drills the hole from the ocean sea bottom or floor to the required depth at which the anchor is to be set. Anchor members or flukes are expanded outwardly to set or secure the anchor to the formation, or the anchor is otherwise secured to the formation, after which an anchor cable or chain is lowered through the drill pipe or lowered over the drill pipe and coupled to the set anchor, whereupon the drill pipe is released from the anchor apparatus and retrieved, with the cable or chain extending to the surface of the ocean or other body of water.

3,797,256

JACK-UP TYPE OFFSHORE PLATFORM APPARATUS

Robert P. Giblon, Shrewsbury, N.J., assignor to George C. Sharp, Inc., New York, N.Y.

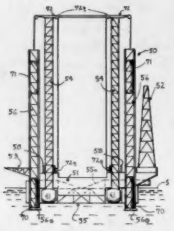
Filed Sept. 8, 1972, Ser. No. 287,256

Int. Cl. E02b *17/00*; **B63b** *35/44*

U.S. Cl. 61—46.5 **30 Claims**

Floatable, jack-up type offshore drilling platform apparatus has "multiple-stage" feature permitting use in water depths greater than 300 feet, e.g. 600 feet or more, under 100-year storm conditions. Either a mobile type rig or a self-erecting permanent type platform structure is provided. Apparatus includes a floatable upper or working platform to be jacked out of water, one or more lower support platforms each functioning as a weight support and as a lateral bracing structure when the apparatus is erected, a plurality (three or more) of 300 feet long upper support legs permanently attached at their lower ends to each lower platform and whose upper ends are slidable through, but attachable to the next platform

thereabove, and a plurality of independently movable lower support legs whose upper ends are slidable through, but attachable to the lowermost platform and whose lower ends rest on the sea bottom. Lower stages widen progressively for increased stability. Stages telescope, the lower platforms nesting with the upper platform, and all support legs projecting above water level, when rig is collapsed and floating. Buoyancy tanks on lowermost legs permit use of winch and cable devices or



low-powered jacks for raising and lowering same, and buoyancy tanks in each lower platform permit use of low-powered jacks for raising and lowering platforms, including upper platforms. Telescopic air or compressed gas operated jack, 145 feet long and having expansible movement of 105 feet, is attached at lower end of each lower support leg in one embodiment, and is also useful on modified form of jack-up offshore platform for intermediate depths.

3,797,257

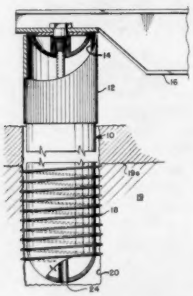
BLADE PILE AND METHOD FOR INCREASING THE BEARING STRENGTH OF PILE

Erwin L. Long, 5741 College Dr., Anchorage, Alaska

Filed Aug. 4, 1972, Ser. No. 278,048

Int. Cl. E02d *3/12, 5/48*

U.S. Cl. 61—53.5 **21 Claims**



A pile and a method for increasing the bearing strength of a pile in which a pile having a helical, flexible blade is rotated or screwed into a pre-augered hole in the permafrost. Several embodiments are disclosed for reducing friction on the blade, by changing the shape of the blade or precutting a groove for the blade. Another embodiment of the method includes introducing a fill material between the surfaces of the blades and between the pile and the soil surrounding the pile and blades.

3,797,258

SHIM TAKE-UP RING FOR PILE CONNECTION

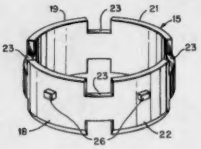
Sidney E. Dubuisson, P.O. Box 60252, New Orleans, La., and Allen J. Verret, P.O. Box 1219, Morgan City, La.

Filed July 12, 1972, Ser. No. 270,893

Int. Cl. B63b *21/00;* **F16l** *9/18;* **E21b** *19/10*

U.S. Cl. 61—53.5 **6 Claims**

The invention relates to a shim fixture adapted for use on a structure employing an elongated cylindrical leg which accommodates an internal cylindrical anchoring pile. The leg slidably accommodates the pile through the center passage thereof as the pile is embedded into an anchoring substratum to a desired depth. The non-uniform annular opening defined between contiguous walls of the pile and the leg respectively is



provided with a shim type take-up ring. The latter is fabricated from a series of discrete, circularly arranged shim segments, each segment having a desired thickness adapted to best be urged through a portion of the irregularly spaced annular opening.

3,797,259

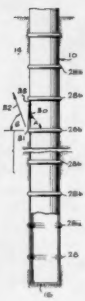
METHOD FOR INSITU ANCHORING PILING

Archer W. Kammerer, Jr., Fullerton, Calif., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Dec. 13, 1971, Ser. No. 207,144

Int. Cl. E02d *5/28;* **B21d** *39/00*

U.S. Cl. 61—53.68 **3 Claims**



Method for securing tubular piling or pile casing in the ground which comprises inserting tubular piling into the ground, preferably heavy piling adapted to be driven into the ground, inserting an expandable mechanism, e.g., an expandable hydraulically actuated mandrel, into the tubular piling at one or more spaced intervals or positions longitudinally along the piling, expanding the mechanism at each such position to expand the piling outwardly to form one or more protrusions spaced longitudinally along the piling, and retracting the expandable mechanism at each such position.

3,797,260

PIPELINE ANCHORING SYSTEM

Brian C. Webb, 732 South 95 East Ave., Tulsa, Okla.,

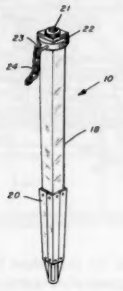
Filed May 18, 1972, Ser. No. 254,461

Int. Cl. F16l *1/00;* **E02d** *5/74*

U.S. Cl. 61—72.1 **13 Claims**

This invention describes a method and apparatus for anchoring a mechanical pipeline system by attaching it to a plurality of anchor posts which have been positioned in the earth. The anchor posts are provided with means for attaching two tension members to their top end. The pipeline may be anchored in a ditch dug into the earth, or in the earth under an overlying layer of water. A plurality of anchor posts arranged

in spaced relation along a line are positioned in the earth. The pipeline is placed on the line over the tops of the anchor posts. A clamp means, adapted to be bent around the pipe, is placed



over and around the pipe. The two tension members which are attached to the posts are then locked to the clamp. Thereafter the pipe is locked to the anchor posts by means of the clamps and the tension members.

3,797,261

SINGLE-STAGE FRACTIONATION OF NATURAL GAS CONTAINING NITROGEN

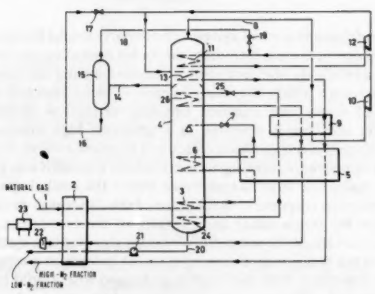
Friedrich Juncker, Bergen-Enkheim; Johannes Kranz, Bad Vilbel; Martin Streich, Nieder-Eschbach; Heiner Tanz, Sprendlingen, and Gerd Vollrath, Steinheim/M, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed May 11, 1971, Ser. No. 142,299

Claims priority, application Germany, May 12, 1970, 2022954

Int. Cl. F25j *1/02, 3/02*

U.S. Cl. 62—40 **8 Claims**



Separation of natural gas containing nitrogen into a low-nitrogen fraction and a high-nitrogen fraction is achieved in a single distillation column in which reflux is provided by expanding the high-nitrogen fraction with the performance of work and using the resulting refrigeration to condense vapor in the upper section of the column while additional reflux is provided by vaporizing a recycle medium in heat exchange relation with vapor in the column. Incoming natural gas is passed in heat exchange relation with liquid in the column bottom, further cooled and expanded into the middle section of the column. A helium-rich fraction may be separated from the high-nitrogen fraction.

3,797,262

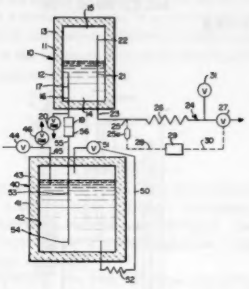
CRYOGENIC FLUID SUPPLY SYSTEM

Lester K. Eigenbrod, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,091

Int. Cl. F17c *7/02*

U.S. Cl. 62—50 **9 Claims**



Oxygen breathing gas is discharged from a system including a larger liquid oxygen supply container and a separate smaller storage-dispenser container which is inverted for filling by the supply container and then turned to the top-up position for dispensing.

3,797,263

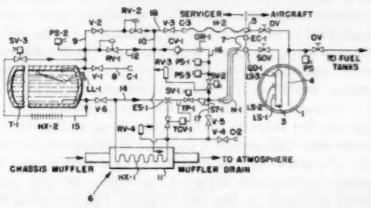
DEWAR FILLING, PURGING, AND DRAINING SYSTEM

Fred A. Shahir, Santa Ana, and William R. Clarke, Los Angeles, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 7, 1972, Ser. No. 216,112

Int. Cl. F17c *7/02*

U.S. Cl. 62—51 **27 Claims**



A dewar filling, purging, and draining system characterized in that in the case of servicing of an aircraft dewar containing inerting fluid in liquid form, such as liquid nitrogen (LN_2), for use in the aircraft for inerting fuel tanks and the like to prevent fire and explosion, the system is embodied in a mobile vehicle such as a pickup truck with the muffler thereof constituting a heat exchanger to control the saturation pressure of the liquid supplied from the system to the aircraft dewar and to heat gaseous nitrogen (GN_2) vented from the system so that no vapor clouds will be visible. The system herein is further characterized in that a single fill hose is employed through which all filling and venting is accomplished, the system and aircraft dewar being provided with pressure switches and the aircraft dewar being provided with liquid level sensors to automatically control the filling and venting functions of the system through electronic controls and valving contained in the system.

3,797,264

LOW-TEMPERATURE PUMPING DEVICE

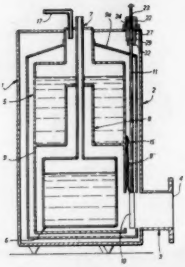
Jean-Jacques Thibault, Saint Martin d'Uriage, and Jean-Claude Boissin, Montbonnot-Saint-Martin, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 27, 1972, Ser. No. 309,701

Claims priority, application France, Nov. 6, 1971, 71.42384; July 7, 1971, 71.24603

Int. Cl. B01d 5/00

U.S. Cl. 62—55.5 18 Claims



An improved low-temperature pump and apparatus for producing very high vacua and ultra-vacua with a pumping speed which can be varied at will, comprises a pumping chamber, a gas-evacuation opening formed in the said chamber, a pumping body located at a distance from the said chamber and adapted to form a main low-temperature pumping surface, comprising also means for cooling the said body to a very low temperature and, if so desired, means for forming a head screen at a moderately cold temperature around and at a distance from the said main low-temperature pumping body, such as an internal wall of the heat-insulating chamber and a gas-permeable reflector baffle, the said pump further comprising a wall-screen continuous thermal relation with a cold element of the said low-temperature pump, forming an auxiliary low-temperature pumping surface and disposed in a valve conduit adapted to be controlled to the chamber to be evacuated, said valve being equipped with a clapper device adjustable in position and adapted to close the opening in the said pumping chamber, and also with means for putting the said wall-screen into operation, said latter means being controlled in dependence on the position of the said closure clapper, forming through said wall-screen a passage of minimum conductivity in the minimum opening position of said clapper and with increasing conductivity between the minimum and maximum opening positions of the said clapper. The invention is especially applicable to furnaces or ovens operating under very high vacua.

3,797,265

PRESSURIZED REFRIGERANT FEED WITH RECIRCULATION

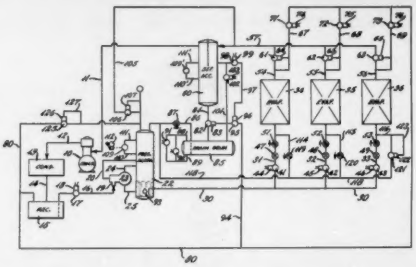
Milton E. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Continuation-in-part of Ser. No. 71,487, Sept. 11, 1970, Pat. No. 3,643,460, and a continuation-in-part of Ser. No. 186,750, Oct. 5, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,794

Int. Cl. F25b 41/00

U.S. Cl. 62—174 7 Claims

A pressure accumulator receives liquid refrigerant from the receiver and supplies it to the evaporators. Liquid from the evaporators is temporarily stored in an upper accumulator from which it may drain to a drum which can be pressurized to return it to the pressure accumulator. A gaseous refrigerant connection from the receiver supplies pressure for the accumulator and for defrosting the evaporators, the arrangement



eliminating the need for individual back pressure valves for each evaporator or group of evaporators during defrosting.

3,797,266

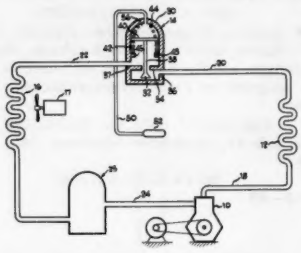
AIR CONDITIONING CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 7, 1972, Ser. No. 269,638

Int. Cl. F25b 41/04

U.S. Cl. 62—223 3 Claims



A refrigerant control system, particularly useful for air conditioning apparatus, including means for operating the system with a relatively high evaporator pressure during the time the temperature within the cooled space is being reduced to its desired level. The constant pressure expansion device, at system start up, is operated at a relatively high pressure to maximize the refrigeration effect and increase cooling capacity. A temperature sensing element, which is sensitive to a variable indicative of air temperature within the cooled space, is operative to reset the control point of the expansion device to reduce the temperature and pressure of the evaporator. The improvement of the subject invention is directed to a system in which the temperature sensing element comprises a temperature responsive bulb and capillary charged with a fluid having a pressure difference over its temperature range which approximately matches the pressure difference of the system refrigerant over its range of operating conditions.

3,797,267

ICE RAKE CONTROL

William F. Hagen, Argyle, Tex., assignor to Turbo Refrigerating Company, Denton, Tex.

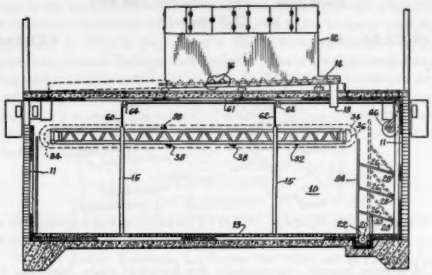
Continuation-in-part of Ser. No. 273,327, July 19, 1972. This application Nov. 15, 1972, Ser. No. 306,712

Int. Cl. F25c 5/18

U.S. Cl. 62—233 11 Claims

A control system for an ice rake in ice making apparatus comprising means to activate the ice rake to raise the ice rake

at predetermined intervals for a predetermined period of time when ice is supplied to the ice making apparatus and means to simultaneously energize the ice rake to drive the flites of the



ice rake in a forward direction for a predetermined time and to drive the flites in a rearward direction for another predetermined time.

3,797,268

MACHINE FOR MAKING ICE CREAM

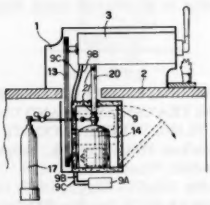
Giancarlo Garavelli, Rome, Italy, assignor to Isernia Aktiengesellschaft, Gamprin, Liechtenstein

Continuation-in-part of Ser. No. 49,450, June 24, 1970, Pat. No. 3,724,234. This application Feb. 1, 1972, Ser. No. 222,615

Claims priority, application Italy, Mar. 6, 1971, 48857/71

Int. Cl. F25c 7/14

U.S. Cl. 62—258 **9 Claims**



A machine for making ice cream having an independent container containing ice cream mix located within a refrigerating chamber, a cylinder of gas under pressure, a feed line extending from the cylinder to the container, a mixer-freezer located outside of the refrigerating chamber, and an outlet tube extending between the container and the mixer-freezer.

3,797,269

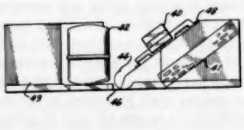
CONDENSATE DISPOSAL SYSTEM

Gordon M. De Jarlais, Frankfort, Ind., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 18, 1972, Ser. No. 290,276

Int. Cl. F25b 47/00

U.S. Cl. 62—280 **5 Claims**



Apparatus is disclosed for disposing of condensate from the evaporator of a refrigeration air conditioning system. A fan in a fan shroud is provided to move a current of air over the condenser and to pressurize the condenser plenum. An aperture through the fan shroud is adjacent to a low point in a base pan designed to collect the condensate. A baffle or air duct adjacent the aperture on the inlet side of the fan shroud directs air from the aperture back into the fan. Condensate is atomized by the return flow of air through the aperture, directed through the fan and onto the condenser of the refrigeration system where it is evaporated. The air duct may be in the form of an upstanding conduit for an air conditioner having a fan with a horizontal axis. In a preferred arrangement the fan axis is tilted and a semi-cylindrical baffle tangent to the base pan opposite the aperture directs air flow back in a largely horizontal direction into the fan.

3,797,270

HEAT PUMP WITH TWO FLUID CIRCUITS

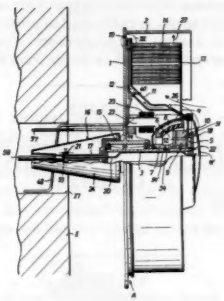
Nikolaus Laing, Aldingen near Stuttgart, Germany, and Ludwig Ludin, Anglikon-Wohlen, Switzerland, assignors to Physikalisch-Technisches Entwicklungsburo Laing, Aldingen bei Stuttgart, Germany

Continuation of Ser. No. 198,721, Nov. 15, 1971. This application June 26, 1973, Ser. No. 373,851

Claims priority, application Switzerland, May 30, 1969, 8321/69; Italy, Nov. 14, 1970, 915728/70

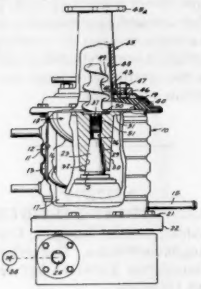
Int. Cl. F25b 3/00

U.S. Cl. 62—333 **22 Claims**



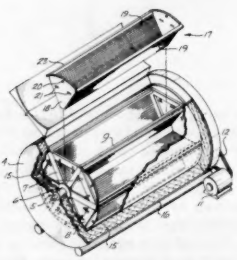
A reversible heat pump, to be used for cooling or heating a space bounded by a wall, has two rotary heat exchangers coaxially mounted on opposite sides of that wall and interconnected by a hub traversing same. The hub includes a highly heat-conductive partition between the fluid-circulation systems of the two heat exchangers. A rotary compressor, forming part of the exterior circulation system, has a housing rigid with the external heat exchanger and an impeller freely rotatable on a shaft of that heat exchanger, this impeller being secured to an armature of a squirrel-cage motor whose field windings are fixedly mounted on the supporting wall structure. The motor armature and the compressor are enshrouded by a magnetically permeable cowl forming a rotary chamber which is filled with a primary heat-carrying fluid, such as Freon, as well as lubricating oil and which communicates with a radiator drum on the periphery of the external heat exchanger. A similar radiator drum on the periphery of the internal heat exchanger is permeated by a secondary heat-carrying fluid, such as a low-boiling alcohol, circulating along the thermally conductive partition in heat-transfer relationship with the primary fluid.

3,797,271
ICE MAKER CONSTRUCTION
Donald F. Swanson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed July 12, 1972, Ser. No. 270,950
Int. Cl. F25c 5/12
U.S. Cl. 62—354 5 Claims



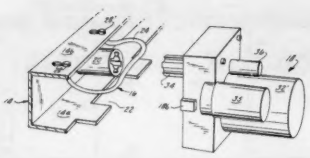
A removable drive connection for the harvest auger of a continuous ice maker having a combined auger and press, has a tapered bored portion extending for a greater portion of the length of the harvest auger and a coaxial threaded portion in comunication with the tapered bored portion forms a means for threading a compression auger to the harvest auger for corotation therewith. A correspondingly tapered drive shaft is keyed to the tapered portion of the harvest auger and is removable therefrom by removing the compression auger and threading a puller screw in the threaded portion of the harvest auger thereby to exert a compressive force on the end of the tapered shaft and pull the harvest auger from the shaft.

3,797,272
QUICK-FREEZER
John A. Huey, 830-84th Ave. N.E., Bellevue, Wash.
Filed Apr. 27, 1971, Ser. No. 137,768
Int. Cl. F25d 25/02
U.S. Cl. 62—38 6 Claims



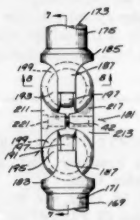
A drum for holding articles to be quick-frozen or otherwise treated is mounted to rotate about a horizontal axis in the cylindrical cavity of a refrigerated or treatment casing which closely embraces the drum. The drum is of skeletal construction and holds trough-shaped receptacles which can be loaded into and removed from the drum through an access opening in the upper portion of the casing closed by a divided cover. The freezing chamber is nearly full of liquid refrigerant, and the convergent sides of the receptacles are perforate or reticulated for free flow of refrigerant through the receptacles as the drum is rotated slowly.

3,797,273
ADJUSTABLE BED MOTOR MOUNT
Roland A. Benoit, and Edmond P. Guillot, both of Danielson, Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed June 1, 1972, Ser. No. 258,861
Int. Cl. F16c 1/06
U.S. Cl. 64—4 8 Claims



A motor mount, particularly for hospital beds, includes a motor unit equipped with a splined male powered shaft which coacts with a female splined socket which is mounted at a bed motor mounting. The socket is rotatably mounted on a mounting member of the bed frame and is connected to a rotatable part which activates the moving parts of the bed. The splined shaft supports the motor unit which is held against rotation by a slot in a cross frame member and against end play by a spring clip attached to the frame. A plurality of motor units are positioned in a console cabinet in a head or foot board. The console contains operational switches for an attendants use and a master disconnect switch which operates when the cabinet door is completely opened to render safe access to motor servicing and the like. The motor mounting includes a gear housing with an output shaft which is connectable to the female splined socket. The gears in the housing are selectably driven by one of a plurality of different motors or by a hand crank which is connectible to an external crank fitting of the housing.

3,797,274
STERN DRIVE UNIT WITH BELLOWS ENCLOSED REVERSING TRANSMISSION AND UNIVERSAL COUPLING STEERING CONTROL
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 139,555, May 3, 1971. This application July 18, 1972, Ser. No. 272,761
Int. Cl. F16d 3/44
U.S. Cl. 64—16 3 Claims



Disclosed herein is a stern drive unit comprising a bellows enclosure defined by a bellows connected between a support adapted to be fixed relative to a boat hull and a tilt housing connected to the support for pivotal movement about a tilt axis, an input shaft extending in the support perpendicularly to the tilt axis, an output shaft journaled in the housing and extending perpendicularly to the tilt axis in generally co-planar relation to the input shaft, a propulsion leg which includes a rotatably mounted propeller connected to the output shaft and which is connected to the tilt housing for pivotal steering

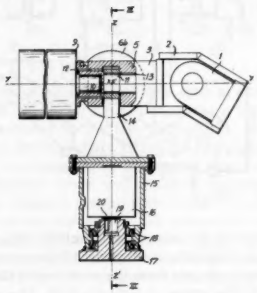
movement about an axis co-axial with the output shaft, a reversing transmission located within the bellows enclosure and connected to the input and output shafts for selectively controlling operation of the propeller and including an actuating lever located forwardly of the support, a shock absorber connected between the tilt housing and the support and extending, at least in part, within the bellows enclosure, and a steering control linkage connected to the steerable propulsion leg and extending, at least in part, in the bellows enclosure and including an actuating member located forwardly of the support, and a universal coupling located within the bellows enclosure and connecting two steering control shafts extending radially of the tilt axis.

3,797,275

CONTROLLED-MOTOR PIVOTING COUPLING DEVICES

Pierre Yvon David; Joel M. Charles, both of La Valette, and Robert Julien Toscano, La Seyne Sur Mer, all of France, assignors to Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement, Paris, France

Filed Aug. 8, 1972, Ser. No. 278,798
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 R **5 Claims**



A device for allowing a part to be coupled to a support with means for controlling pivotal movements around three perpendicular axes. The device includes an appliance suspended on the arm of a hoisting apparatus by means of a coupling device comprising a bearing extended by a fork carrying two hydraulic motor brakes. A cardan sprocket rotates the fork around the x–x′ axis and is firmly connected with the shafts of the motors. The sprocket carries a further hydraulic motor-brake on a shaft to which is attached a shaft pivotable relative to said the sprocket around the y–y′ axis. A support is integral with the latter shaft and it contains a further or motor brake on which is suspended an appliance pivotable around the vertical axis Z–Z′.

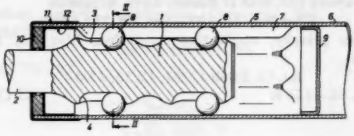
3,797,276

SLIDING JOINT FOR TRANSMITTING TORQUE

Michel Orain, Conflans-Ste-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed May 22, 1972, Ser. No. 255,459
Claims priority, application France, Dec. 10, 1971, 71.44408
Int. Cl. F16d *3/06*
U.S. Cl. 64—23.7 **6 Claims**

A sliding joint for transmitting torque from a driving shaft to a driven shaft. One of the shafts is connected to a shank member and the other of the shafts to a sleeve member. The shank member is adapted to be displaced axially relative to the sleeve member. Balls are interposed between the members which are in addition provided with sockets and grooves respectively for housing the balls along their rolling paths of movement. The grooves are substantially semi-circular in cross section and extend parallel to the axis of the joint and regularly angularly spaced thereabout. The sockets on the other hand are divided into two axially spaced groups and are



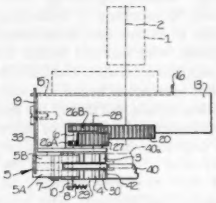
parallel to the grooves. The sockets have spherically shaped ends and middle sections in semi-circular cross section. The spherical ends of the sockets may be formed in stop members of material having a low coefficient of sliding friction.

3,797,277

SAFETY DEVICE FOR POSITIONING OF PATTERN DRUMS IN CIRCULAR KNITTING MACHINES

Jose Maria Dalmau Guell, San Bruno, 103, Badalona, Spain

Filed July 19, 1971, Ser. No. 163,895
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B **3 Claims**



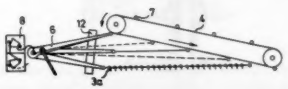
In a circular knitting machine first and second ratchet wheels which regulate the alternate clockwise and counterclockwise rotation of a knitting instrumentality selector drum, a safety device for ensuring accurate positioning of the drum, consisting of a pawl with two pawl fingers adapted to latch the ratchet wheels and an unlatching element which withdraws the pawl from the ratchet wheels and allows the drum to turn.

3,797,278

WARP KNITTING MACHINE

Karl Kohl, Chlorodontstrasse 10, D-6053 Obertshausen, Germany

Continuation-in-part of Ser. No. 161,859, July 9, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,784
Int. Cl. D04b *23/06*
U.S. Cl. 66—84 **5 Claims**



A warp chain receives yarn from a plurality of spools fixedly arranged laterally adjacent a warp knitting machine. The yarn is transferred from the spools to the chain by a plurality of pivotal yarn guides whose free ends pass through arcuate paths during pivoting of the guides. One point of each yarn guide path is adjacent the warp chain for transfer of the yarn thereto and all the arcuate paths intersect at least in one point in the region of the yarn transfer point.

3,797,279

THREAD-FEEDING, TENSION-REGULATING DEVICE FOR STRAIGHT KNITTING MACHINES

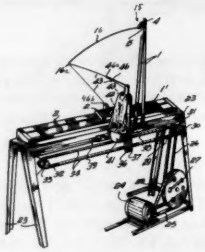
Luis Kline, Estados Unidos 1666, and Fernando J. Silberman, Chacabuco 145, both of Buenos Aires, Argentina

Filed May 25, 1972, Ser. No. 256,691

Claims priority, application Argentina, May 26, 1971, 235806

Int. Cl. D04b 15/52, 15/56, 15/64

U.S. Cl. 66—126 R 11 Claims



Thread-feeding, tension-regulating device for straight knitting machines, comprising a tensioning arm having a threading member at its free end, supplementing those of the associated machine, with resilient means tending to lift the free end of the supplemental arm, and a device for multiplying the displacements, interposed between a movable application point of the resilient means and that of the pressure exerted on the body of the supplemental arm. The latter performs a substantial angular displacement despite of a very small displacement of the movable application point, the pressure of the resilient means thus remaining virtually uniform along the path of the angular displacement. The inventive device can take various constructional forms.

3,797,280

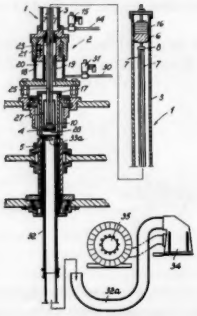
STRETCHER DEVICE FOR ARTICLES UNDER MANUFACTURE ON DOUBLE CYLINDER CIRCULAR KNITTING MACHINES

Francesco Lonati, Via S. Polo 11, Brescia, Italy (25100)

Continuation-in-part of Ser. No. 188,693, Oct. 12, 1971. This application Apr. 24, 1972, Ser. No. 271,263

Int. Cl. D04b 15/88, 27/34

U.S. Cl. 66—149 R 9 Claims



A stretcher device for articles under manufacture on double cylinder circular knitting machines has a first hydraulic piston cylinder unit fixed coaxially above the needle cylinder and a first pair of vertical rods supported on the stem of the piston-cylinder unit. The stretcher devices also comprises a second hydraulic piston-cylinder unit co-axial with the first one. The piston of the latter piston-cylinder unit is formed with cavities for the slidable passage of the first pair of rods. A second pair of rods is arranged to pass into corresponding passages formed in a body rigid with the needle cylinder. Engagement means for the articles, under manufacture are supported by the two pair of rods and arranged to be alternately moved in an upward and downward direction by the two piston-cylinder units.

3,797,281

APPARATUS FOR TREATING WEBS

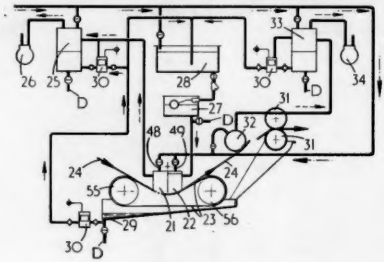
David Edward Pepler Norton, Over Alderley, England, assignor to Sir James Farmer & Co. Limited, Salford, Manchester, Lancashire, England

Filed Mar. 7, 1972, Ser. No. 232,545

Claims priority, application Great Britain, June 12, 1971, 27654/71

Int. Cl. B05c 5/02, 9/08

U.S. Cl. 68—19.1 16 Claims



An apparatus for impregnating cloth with, for example a dye liquor in which the cloth is moved past a vacuum chamber which removes the air from the cloth and is then immediately subjected to the action of a dyeing bath. The evacuated cloth either is passed through the dye bath or it is moved past the outlet of a dye bath, the dye being fed gravitationally to the cloth in the latter case. An endless rubber belt ensures that there is no loss of vacuum at the vacuum chamber and assists in moving the cloth past the vacuum chamber and dye bath; the cloth is in direct contact with the vacuum chamber which is not rotated.

3,797,282

CHAIN LOCK

Rene Frontera-Mariani, Calle 4 No. 12-Urb. El Rosario, Yauco, P.R.

Filed Nov. 1, 1972, Ser. No. 302,673

Int. Cl. E05b 67/36

U.S. Cl. 70—49 6 Claims

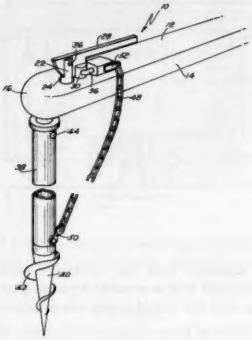
An improved chain lock with a pair of chain engaging members mounted for rotational movement within a housing having opposed openings for each receiving a chain end, a latching mechanism for latching the members in a chain engaging position after they have been rotated to that position by insertion of a chain end into the opening, a spring urging the members into rotation to a release position and a key mechanism for releasing the latching mechanism for either member so that the chain end held by that member can be withdrawn.

3,797,283

DEVICE FOR LOCKING MOVABLE OBJECTS TO THE GROUND

Arthur M. Honer, 111 Redfield Ave., Fayetteville, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,789
Int. Cl. E05b 73/00
U.S. Cl. 70—58 3 Claims



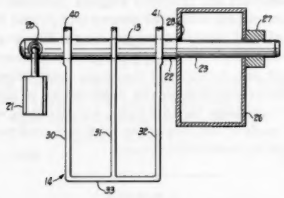
A device for locking movable objects, such as trailers, campers, or the like, to the ground, comprising a conventional trailer tongue secured to the movable object, said tongue being of the type having socket means for lockingly receiving a ball member attached to the top end of a stake having a pointed and threaded lower end which is securely screwed into the ground, whereby the movable object is locked to the stake by means of the ball and socket connection, the invention further comprising link means interconnecting the stake and the trailer tongue so as to prevent sufficient turning of the stake to permit it to become unscrewed from the ground.

3,797,284

SKI PROTECTION SYSTEM AND PARTS THEREFOR

George W. Grossman, 17125 Amber Dr., Cleveland, Ohio

Filed Mar. 16, 1972, Ser. No. 235,201
Int. Cl. E05b 73/00
U.S. Cl. 70—58 15 Claims



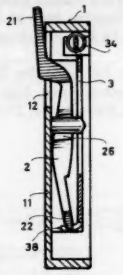
A device for securing skis, ski poles, and the like, including a rod secured to a beam, wall, or other supporting structure, a frame adapted to slide over the rod and means for locking the frame on the rod. The frame includes at least two interconnected members and is open at one side to receive the skis between them. Each member has a rod receiving aperture by which the frame is mounted over the rod to close the open side of the frame once the skis are disposed within the frame. An aperure is also provided in the rod at its outer end to receive a padlock for securing the frame on the rod.

3,797,285

ROUND FURNITURE RECESS LOCK

Ewald Jung, Mettberg, Germany, assignor to La Porte Sohne, Wuppertal-Barmen, Germany

Filed Jan. 23, 1973, Ser. No. 325,964
Claims priority, application Germany, Feb. 2, 1972, 2204847
Int. Cl. E05b 65/46
U.S. Cl. 70—83 9 Claims



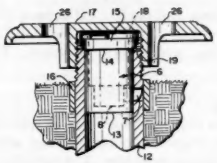
A lock for recessing into an article of furniture which is responsive to a key consisting of a housing having a latch opening formed on its back side, a lid having an opening to receive the key for closing the housing, a latching bolt slidably disposed in said housing having an extending front latch portion offset from the plane of the bolt in the direction of the back of the housing for movement through the opening of said housing, a spring-loaded lock tumbler disposed in said housing and engaging said latching bolt for defining the lock and unlock positions of said bolt, so that when the key is inserted in the housing and rotated, it engages the latch bolt to move the offset front portion out of the housing latch opening in order to lock the furniture article.

3,797,286

CONCEALED LOCK FOR WATER SERVICE CUT-OFF BOX

John R. Saporito, Rockford, Ill., assignor to Joseph A. Spinello and Frank J. Fasula, both of Rockford, Ill., part interest to each

Filed July 26, 1972, Ser. No. 275,235
Int. Cl. F16k 35/10
U.S. Cl. 70—169 2 Claims



This lock consists of only a stepped cylindrical body the reduced lower shank portion of which fits snugly in the upper end of the stand-pipe with the shouldered upper end resting on the stand-pipe so as to locate the radially movable bolt at the exact level of a keeper hole drilled radially in the upper end portion of the stand-pipe. A press fit ring applied to the outside of the pipe closes the outer end of the hole to protect the lock against dirt and moisture from outside the pipe. A key in possession of an authorized employee of the city water department serves to unlock the lock so it can be removed when a T-wrench of suitable length to reach down below the frost line is to be applied to the stem of the shut-off valve through the

stand-pipe to open or close the valve. The usual screw-on cover cap at ground level threads onto the upper end of the stand-pipe and serves to conceal and protect the lock against being tampered with. Usually the aforesaid T-wrench serves also to unscrew this cap and replace it.

3,797,287

STEERING SYSTEM LOCK FOR DIESEL POWERED MOTOR VEHICLES

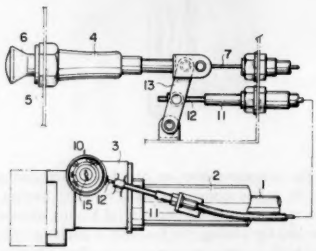
Yoshio Iba, and Yutaka Tomizu, both of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Japan

Filed May 1, 1972, Ser. No. 249,083

Claims priority, application Japan, Aug. 24, 1971, 46-63995

Int. Cl. B60r *25/04, 25/02*

U.S. Cl. 70—239 **6 Claims**



A steering system lock device for a Diesel powered motor vehicle includes, in combination, a key cylinder assembly for locking the steering shaft of the vehicle and an engine shut-down device for starting and stopping the vehicle engine. By inserting a key, the key cylinder assembly can be displaced between several positions including a locked position for the steering shaft. A push-pull connector cable extends between the key cylinder assembly and the engine shut-down device to operatively connect to each other. The key cylinder assembly can be displaced in a position for locking the steering shaft by a key only during the engine stop by operation of the engine shut-down device. On the other hand, the key cylinder assembly is prevented from displacing into the locking position during operation of the engine.

3,797,288

MAGNETICALLY-OPERATED LOCKING AND CONTROL DEVICE

Hermann Hallmann, Hofweg 51, 2 Hamburg 76, Germany

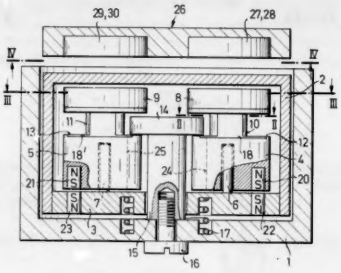
Filed Feb. 8, 1973, Ser. No. 330,758

Claims priority, application Germany, Feb. 10, 1972, 2206332

Int. Cl. E05b *47/00*

U.S. Cl. 70—276 **5 Claims**

A locking and control device has at least one tumbler in which a control magnet is arranged, and which is rotatable between two extreme positions. The tumbler is movable by means of an operating magnet carried by a functional member to an operative position in which a protection bolt can be inserted through an excision of the tumbler. A magnetic compensatory device comprises a further magnet carried by the functional member, with the compensatory magnet and the operating magnet arranged so that in the operative position they are located on either side of the control magnet but in a plane transposed along the axis of rotation of the tumbler. The compensatory device exerts a repulsive force contrary to the operating magnet, with the result that the control magnet is urged to said operative position which is intermediate said extreme positions. In a non-operative position the tumbler has a contacting surface disposed adjacent a contacting surface of the bolt, to prevent withdrawal of the latter, and the contacting surface of the tumbler is formed with at least one detent groove. The bolt can enter into detent engagement with said groove to prevent unauthorised rotation of the tumbler when



in a position separate from the operative position, and the tumbler is associated with a security-type magnet arrangement which tends to shift the tumbler into the position of detent engagement.

3,797,289

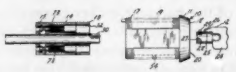
RADIALLY ARRANGED TUMBLER TYPE LOCK

Leonard Mercurio, 34 Beaumont Dr., Plainview, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,332

Int. Cl. E05b *15/14, 27/08*

U.S. Cl. 70—363 **2 Claims**



A radially arranged tumbler type lock having secondary locking means brought into operation upon an attempt to pick the lock without a key. The rotating parts of the lock include a main shaft engageable at an outer end by a key, a first tumbler-carrying plug element fixed to said shaft, a second tumbler-carrying plug element fixed relative to an outer housing, and a third plug element fixed to said shaft and defining a circular groove in which the inner ends of tumblers may move when the tumblers are properly aligned. Arcuate slots transversely communicate with said groove and permit entry of the inner ends of said tumblers therethrough. However, if an attempt is made to pick the lock by progressively overcoming individual tumblers, rotation of the main shaft through a small increment made possible by the overcoming of the first tumbler serves to misalign the remaining arcuate slots with respect to the inner ends of the remaining tumblers, and prevents subsequent aligning movement thereof.

3,797,290

CYLINDER LOCK

Jack William Taylor, Bournemouth, England, assignor to Ingersoll Locks Limited, Ascot, Berkshire, England

Filed July 21, 1972, Ser. No. 273,863

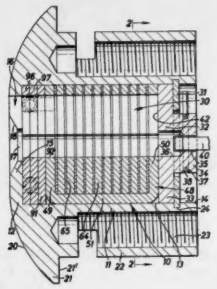
Claims priority, application Great Britain, July 28, 1971, 35430/71

Int. Cl. E05b *29/00*

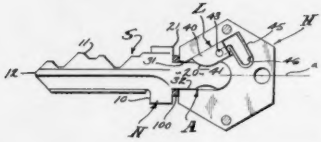
U.S. Cl. 70—366 **11 Claims**

A key operable plug mechanism having a body, a side bar movable to engage the body, a plurality of tumblers, a cylinder for said tumblers, each of said tumblers having a key engaging surface and a side bar accommodating notch the arrangement

being such that on insertion of an appropriate key and rotation of the same, the key engaging surfaces are picked-up to align the notches of the tumblers and such that the rotary motion of the key is transmitted to said side bar through said cylinder.

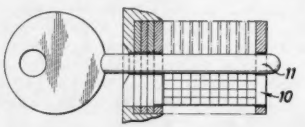


3,797,291
SEPARABLE KEY-HEAD LATCH AND CASE
Parviz Simorghi, 10645 Wilshire Blvd., Los Angeles, Calif.
Filed Aug. 14, 1972, Ser. No. 280,658
Int. Cl. E05b *19/04*
U.S. Cl. 70—395 **9 Claims**



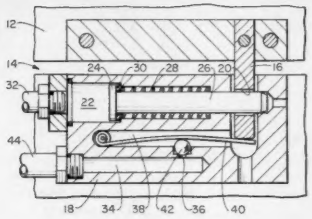
A key system especially suited for encasing a multiplicity of different sized keys with facility, reducing their weight and bulk and with indicating means assuring the selectivity as circumstances require; and comprised of separable keys and a common head therefor with a releasable self-binding latch for manipulation of said keys respectively; and all of which reduces the keys to their minimum shank configurations containing the lock combinations and adapted to be stored in a case associated therewith and having individual pockets selected according to their relative size.

3,797,292
KEYS
Jack William Taylor, Bournemouth, England, assignor to Ingersoll Locks Limited, Berkshire, England
Filed July 21, 1972, Ser. No. 273,794
Int. Cl. E05b *19/06*
U.S. Cl. 70—409 **4 Claims**



The invention is for a key comprising a bit having at least one tumbler engaging surface area including a plurality of step portions each step portion being adapted to engage an appropriate tumbler in said lock with which the key is to be employed each step being shaped or cut in its extremity to enable a surface area of the step to engage a key engaging portion of said tumbler wherein the thickness of the step portions is varied along the length of a bit constituted by said portions.

3,797,293
SAFETY LOCK FOR SAFETY EQUIPMENT SUCH AS HOODS FOR CAN MAKING MACHINERY
Elpidifor Paramonoff, Los Angeles, Calif., assignor to Stanclun, Inc., St. Compton, Calif.
Filed Jan. 22, 1973, Ser. No. 325,908
Int. Cl. B21d *55/00*
U.S. Cl. 72—26 **12 Claims**

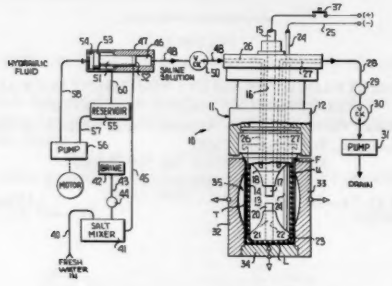


A first fluid line requiring fluid pressure therein throughout operation of an operating mechanism communicates with a fluid cylinder which when fluid pressurized, extends a plunger into secure engagement with an engagement member in its fully engaged position. The engagement member forms a part of safety equipment which places the engagement member in fully engaged position when closed and must be retained closed during operating mechanism operation for safety purposes. A second fluid line requiring fluid pressure therein to be maintained for the starting of the operating mechanism or for the continued operation thereof communicates with a fluid vent relieving fluid pressure when open and retaining fluid pressure when closed by a ball controlled by a pivotal cantilever member. An end portion of the cantilever member is engaged by the engagement member when in fully engaged position retaining the ball against fluid venting, the cantilever member relieving the ball for fluid venting when the engagement member is in any disengaged position away from fully engaged position. Thus, the cantilever member and ball absolutely assures that the engagement member will be in fully engaged position prior to start or for continued operation of the operating mechanism and the cylinder and plunger positively locks the engagement member in fully engaged position during operating mechanism operation.

3,797,294
APPARATUS FOR HYDRAULIC ELECTROHYDRAULIC FORMING OF TUBULAR ELEMENTS
Donald J. Roth, Chicago Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 25, 1968, Ser. No. 762,522
Int. Cl. B21d *26/12*
U.S. Cl. 72—56 **1 Claim**

This disclosure relates to an apparatus for contouring tubular elements, such as can bodies, into conformity with a mold by first subjecting the interior of a tubular element to fluid pressure which expands the tubular element into general conformity with the mold cavity surface, and thereafter discharg-

ing electrical energy while the fluid medium is still under pressure to create a momentary shock wave which further expands the tubular element into intimate contact with the cavity surface.



3,797,295

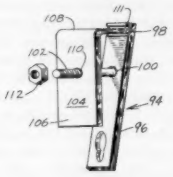
METHOD OF AND APPARATUS FOR REPAIRING DEFORMED YIELDABLE STRUCTURES

Anastacio V. Sanchez, 10775 Foothill Blvd., Santa Clara, Calif.

Division of Ser. No. 14,558, Feb. 26, 1970, Pat. No. 3,673,842. This application Nov. 26, 1971, Ser. No. 202,109

Int. Cl. B21d *1/12, 37/00*

U.S. Cl. 72—308 **1 Claim**



Method and apparatus for repairing vehicle bodies including placing a vehicle body to be repaired within a stall, engaging attachment tools with preshaped contour surfaces to the body about the area to be repaired, joining the tool to tension cable means guided by a select guide means to guide the cable along a desired line of action, and applying tension means to the cable means for placing the cable in tension at adjustable magnitudes along said line of action.

3,797,296

METHOD AND APPARATUS FOR FORMING CONVOLUTED METAL ANNULUS

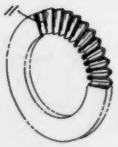
Vernon R. Fencl, Northbrook, and Albert Roze, Chicago, both of Ill., assignors to Crontnes Machine Works, Inc., Chicago, Ill.

Division of Ser. No. 226,057, Feb. 14, 1972. This application Jan. 18, 1973, Ser. No. 324,644

Int. Cl. B21d *13/00*

U.S. Cl. 72—367 **2 Claims**

A method and apparatus for forming a radially convoluted annulus from a cylindrical blank of sheet metal. The convoluted annulus may be used in disc brake assemblies, for example. Two circular sets of individually pivoted forming tools initially grip the cylindrical blank on opposite sides thereof, and are then pivoted inwardly to convert the cylinder to an annulus which may be either flat or tapered. At the same time, the two sets of forming tools are advanced relatively toward each other so as to form radial convolutions in the metal blank. The pivotal movement of the two sets of forming tools is controlled by hydraulically actuated cams.



3,797,297

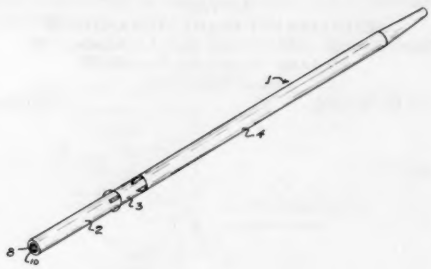
ROLLER RIDGE EXPANDING TOOL

Lawrence W. Wightman, and Eugene F. Paul, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis County, Mo.

Filed Feb. 25, 1972, Ser. No. 229,457

Int. Cl. B21d *41/02*

U.S. Cl. 72—393 **16 Claims**



An expanding tool is provided which utilizes low friction means to expand tubular structures, for example, electrode elements for electronic air filters. The low friction means, in the illustrated embodiment, comprises a plurality of roller wheels arranged to provide tube expansion at spaced intervals about the tube. The particular construction utilized enables the radial expansion force exerted during tube expansion, that is, the force of the roller against the tube, to be balanced by the reaction force between the rollers themselves. Consequently, the only force required to push the expanding tool is that necessary to overcome the friction force of the rollers.

3,797,298

VERTICAL HYDRAULIC PRESS

Vitaly Pankratievich Vasilkovsky, ulitsa Kirovgradskaya, 65, kv. 18; Nikolai Feodosovich Grebnev, ulitsa Novatorov, 7, kv. 8; Leonid Alexandrovich Efimov, ulitsa Khmeleva, 18, kv. 77; Georgy Pavlovich Zakharov, ulitsa Kalinina, 65, kv. 53; Mikhail Ruvimovich Kavitsky, ulitsa 40 let Oktyabrya, 15, kv. 55, all of Sverdlovsk; Pavel Andreevich Malkov, ulitsa Televidenia, 1, Korpus 4, kv. 34, Moscow; Petr Alexeevich Pylaikin, ulitsa Lomonosova, 9, kv. 115, Sverdlovsk; Boris Vasilievich Rozanov, ulitsa Sharikopodshysnikovskaya, 2, Kv. 40, Moscow; Vladimir Mikhailovich Sinitsky, ulitsa 40 let Oktyabrya, 9, kv. 39, and Sergei Grigorievich Khirdzhiev, ulitsa Mashinostroitelei, 51, kv. 38, both of Sverdlovsk, all of U.S.S.R.

Filed Feb. 18, 1972, Ser. No. 227,421

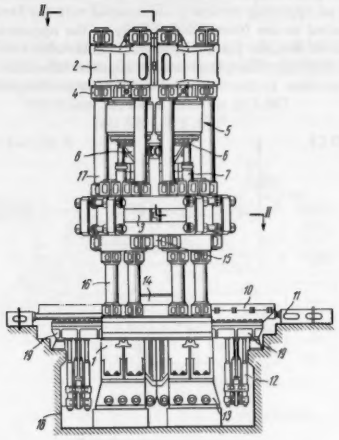
Claims priority, application U.S.S.R., Mar. 17, 1971, 1,628,325

Int. Cl. B21j *9/12*

U.S. Cl. 72—453 **3 Claims**

The press disclosed comprises a plate disposed between upper and lower fixed cross-booms, rigidly connected

therewith by columns and carrying return cylinders. The plate has a central hole accomodating guides mounted therein, adjusted in accordance with the clearance and intended for a slide moving therealong, connected with a movable crosspiece and carrying a movable tool.



3,797,299

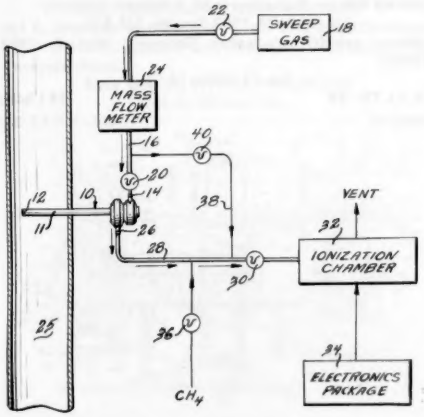
METHOD OF MEASURING THE TRITIUM CONCENTRATION IN A HIGH-TEMPERATURE ENVIRONMENT

Paul A. Nelson, Wheaton, and Romesh Kumar, Hinsdale, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 23, 1973, Ser. No. 353,256

Int. Cl. G01n *7/10*

U.S. Cl. 73—19 **10 Claims**



This invention deals with a novel method for measuring the tritium concentration in a high-temperature environment such as liquid metal. An enclosed, thin-wall metal membrane is connected to a sweep gas source containing hydrogen in an inert carrier gas, the membrane being formed from a metal substantially inert to the high-temperature environment and through which elemental hydrogen and tritium will diffuse. The outer surface of the metal membrane is then contacted with the high-temperature environment, and the interior surface of the membrane is contacted and swept by the sweep gas, whereby tritium atoms diffusing through the walls of the membrane react with the hydrogen in the sweep gas at the interior surface of the membrane to form gaseous hydrogen tritium molecules which are immediately swept away from the membrane's interior surface. The sweep gas containing the gaseous hydrogen-tritium molecules is continuously removed from the enclosed membrane and measured for tritium radioactivity, the radioactivity measurement being indicative of the tritium concentration in the high-temperature environment.

3,797,300

AUTOMATIC BASE LINE DRIFT CORRECTOR DEVICE FOR USE IN AN INTEGRATOR FOR CHROMATOGRAPHICAL ANALYSIS

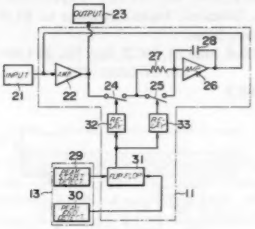
Tatsuo Sato, Kyoto City, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto City, Japan

Filed Nov. 23, 1971, Ser. No. 201,396

Claims priority, application Japan, Nov. 25, 1970, 45-103936; Nov. 25, 1970, 45-117157

Int. Cl. G01n *31/08*

U.S. Cl. 73—23.1 **5 Claims**



An automatic base line drift corrector device for use in an integrator for chromatographical analysis, essentially including means for generating an instantaneous correction signal by which a correcting operation with respect to the base line value of the signal can be instantaneously carried out and means for generating a non-instantaneous correction signal by which a correcting operation with respect to the base line value of the signal can be carried out with a time lag with respect to the detected signal, either of said first and second generating means being employed by a switching means for excluding an interval between the starting and terminating points of the peak appearing in the signal in connection with the wave form or time of the signal.

3,797,301

SOIL TESTER

Edward M. Hawes, 32418 Birkshire, St. Clair Shores, Mich.

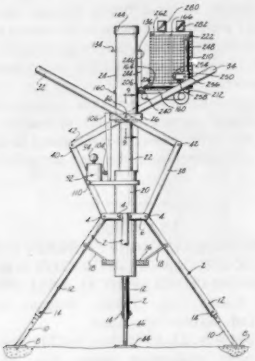
Filed Sept. 6, 1972, Ser. No. 286,640

Int. Cl. G01n *3/24*

U.S. Cl. 73—84 **32 Claims**

Two cylinders telescopingly receive a third between them, one of the two is on a quadripod mount. Handles pull said two cylinders together and put air pressure on a soil engaging instrument. The greater the downward pull on the handles, the greater the air pressure and the greater the torque, through a helical cam, on the instrument. The top cylinder carries a recorder which marks a strip chart on a drum with the soil

shear strength (torque) as a function of the vertical load (air pressure) on the instrument. The chart is carried on supply



and take-up spools mounted on the underside of the recorder drum, slotted to permit chart movement.

3,797,302

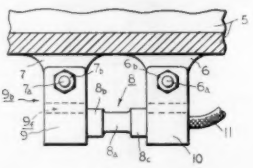
ON-BOARD AIRCRAFT WEIGHT TRANSDUCER WITH MECHANICAL OFFSET ADJUSTMENT

Eric Laimins, Belmont, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.

Filed June 21, 1972, Ser. No. 264,941

Int. Cl. G011 *1/22*

U.S. Cl. 73—88.5 **8 Claims**



An externally-mounted strain-gage transducer for sensing aircraft weight components in response to load-induced deformations of a support such as an axle, truck beam, or the like, is of an elongated form with end lugs designed for bolting to cooperating horizontally-spaced lugs integral with the support, the transducer end lugs each being provided with an adjustably-deformable hole-and-slot type symmetrical flexural connection by which the transducer ends may be raised or lowered wholly in the desired vertical direction to offset effects such as those of otherwise-unavoidable installation zero shift.

3,797,303

BIAXIAL COMPRESSION-TESTING MACHINE

Alain Georges Bernard Bascoul, Toulouse; Jean-Paul Bourdes, Albi, and Jacques Moulis, Ram Onville-Saintagne, all of France, assignors to Agence Nationale de Valerisation de la Recherche, Tour Aurore, France

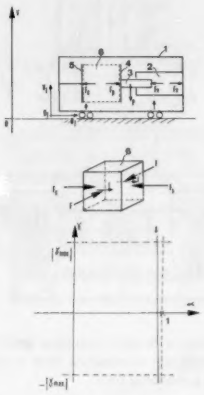
Filed Nov. 28, 1972, Ser. No. 310,094

Claims priority, application France, Nov. 29, 1971, 71.42699

Int. Cl. G01n *3/08*

U.S. Cl. 73—94 **7 Claims**

The machine comprises two compression assemblies, each of which is called upon to apply a monoaxial compression load to the test piece in a direction horizontal and perpendicular to the load applied by the other assembly and coplanar therewith; each assembly includes a jack, the body of which is integral with the frame, and a piston applying pressure to a vertical plate adapted to apply a load to one surface of the test piece; an opposing vertical plate, coaxial with the first plate, is connected to the frame for applying to the opposite parallel surface of the test piece a load of modulus equal to the load applied by the first plate and in opposite direction thereto. The machine is characterized in that each compression as-



sembly is carried, independently of the other assembly, on guide means having little friction and making it possible for the assembly to move freely in a horizontal direction, parallel with the direction of application of the load by the assembly; the guide means associated with the other assembly similarly making it possible for the latter to move in a direction parallel with the direction of application of the load by the other assembly and at right angles to the direction of movement of the first assembly.

3,797,304

TORQUE LOAD APPLYING TESTING APPARATUS

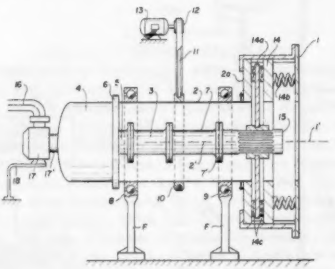
Friedrich Klinger, Kafkastrasse 30, Arheligen, Germany

Filed Feb. 24, 1972, Ser. No. 228,836

Claims priority, application Germany, Mar. 8, 1971, 2110951

Int. Cl. G01m *13/02*

U.S. Cl. 73—99 **19 Claims**



The present testing apparatus applies torque loads to test samples. The test sample and a torque transmitting member are arranged to have substantially the same main axis, whereby one end of the test sample and the respective end of the torque transmitting member are connected to each other in a force transmitting manner, whereas the opposite end of the test sample and the corresponding opposite end of the

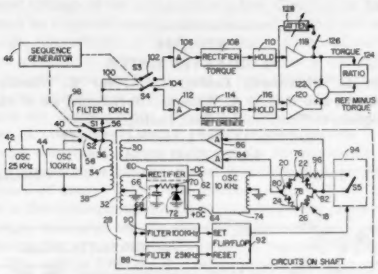
torque transmitting member are coupled to wind up said opposite ends relative to each other.

3,797,305

SELF CALIBRATING STRAIN GAGE TORQUEMETER

Ginns Haskell, Belmont, Mass., assignor to The Indikon Company, Inc., Watertown, Mass.

Filed Jan. 31, 1972, Ser. No. 222,267
Int. Cl. G011 *3/10*
U.S. Cl. 73—136 A **12 Claims**



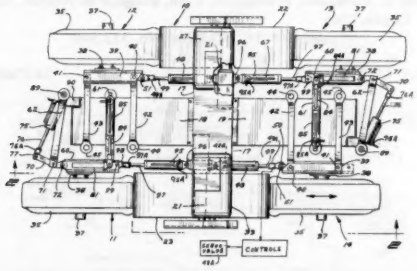
A torquemeter for sensing the torque transmitted by a rotatable shaft and adapted to compensate for measurement errors such as those resulting from variations in coupling between instrumentation on the rotatable shaft and torque indicating electronics or variations in the shaft mounted instrumentation. Torque sensing instrumentation on the rotatable shaft provides a torque signal representative of actual shaft torque and periodically interrupts the torque signal to provide a reference signal representative of a known, calibration torque. The torque and reference signals are both coupled from the shaft to the external torque indicating electronics where they are logically processed to provide an indication of the torque in the shaft, compensated for variations that do not represent torque.

3,797,306

TIRE COMPLIANCE TEST MACHINE

Niel R. Petersen, Hopkins, and Paul S. Petersen, Minnetonka, both of Minn., assignors to MTS Systems Corporation, Minneapolis, Minn.

Filed Sept. 25, 1972, Ser. No. 291,720
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **10 Claims**



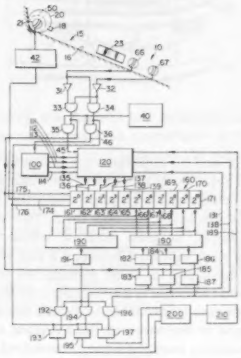
A tire compliance test machine which mounts a tire to be tested on a parallel linkage arrangement that maintains the tire in a preselected relationship to a road wheel against which the tire is loaded, and which is mounted so that the loading forces are transferred directly between the road wheel and the tire being tested without having a large, cumbersome frame to carry the load. The test machine includes means for adding camber and steer motions to the tire being tested.

3,797,307

COIN DISCRIMINATOR

Reed H. Johnston, Wellesley, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 172,096, Aug. 16, 1971, abandoned. This application Jan. 20, 1972, Ser. No. 219,327
Int. Cl. G07f *3/02*
U.S. Cl. 73—163 **94 Claims**



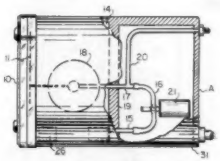
A method and apparatus for discriminating between coins with respect to denomination and authenticity, employing means for performing two or more coin tests, means for storing a value dependent upon the results of the first coin test, and means for evaluating the results of the second coin test in a manner dependent upon the results of the first coin test.

3,797,308

AIRCRAFT LANDING ALTIMETER

Carl J. Crane, Box 316, Helotes, Tex.

Filed Nov. 6, 1972, Ser. No. 303,828
Int. Cl. G01c *21/00*; G01l *7/12*
U.S. Cl. 73—178 T **3 Claims**



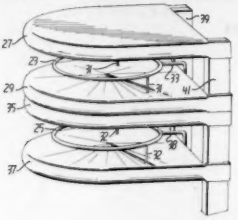
An aircraft landing altimeter is obtained for indicating height above touchdown of a landing aircraft after passing a known distance and known height from touchdown point. The indicator pointer responds to static atmospheric pressure difference between the touchdown point and that along the glide slope (ILS) at a selected marker beacon site.

3,797,309

METHOD AND APPARATUS FOR SENSING THE RELATIVE DIRECTION AND VELOCITY OF MOVEMENT OF A BODY IN A LIQUID OR GAS MEDIUM

Robert D. Joy, and Russell F. Cotton, both of Cedar Rapids, Iowa, assignors to J-TEC Associates, Incorporated, Cedar Rapids, Iowa

Filed July 31, 1972, Ser. No. 276,364
Int. Cl. G01f 1/00; G01p 5/00
U.S. Cl. 73—194 B **32 Claims**



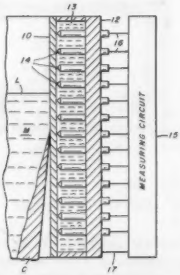
A method of and an apparatus for determining the relative direction and velocity of movement between an object and a fluid stream (either gas or liquid) using the Karman vortex phenomena is disclosed. In one form, two omnidirectional ring-shaped struts, at least one of which has a varying thickness, are each mounted between a pair of sonic transducers. One of each pair of sonic transducers is a transmitting transducer, and the other is a receiving transducer. The transmitting transducers transmit sonic signals toward the Karman vortices formed in the wake of their related omnidirectional struts. The vortices modulate the transmitted signal and the modulated signal is received by the receiving transducers. The two thusly received modulated signals are compared in a manner such that the relative direction and the velocity of movement between the strut and the fluid stream is determined. In a second form, two tubes are mounted in orthogonal directions relative to one another. A vortex sensing arrangement is located in either end of each tube to sense the rate of fluid flow entering the ends of the tubes. The thusly measured rates of fluid flow are combined to determine the relative direction and velocity of movement between the tubes and the fluid stream in which the tubes are located.

3,797,310

TEMPERATURE SENSING DEVICE

Clarence E. Babcock, Penn Hills Township, Allegheny County, and James H. Wilson, Franklin Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 88,780, Nov. 12, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 230,048
Int. Cl. G01f 23/22; G01k 7/08
U.S. Cl. 73—295 **5 Claims**



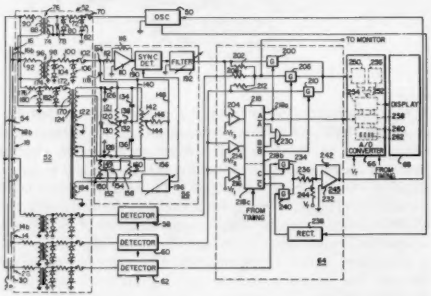
An improved temperature-sensing device for use in a mechanism which locates the level of a hot liquid in a metallic vessel. The device is intended especially for use in a water-cooled continuous-casting mold, where it is known to place a row of vertically spaced thermocouples in the mold and connect them to a measuring circuit. The circuit indicates a temperature profile in which an abrupt temperature change shows the location of the liquid level. The present invention replaces the conventional thermocouples used previously with simple probes which have single point contact with the vessel. The probes and vessel wall are of different metals, whereby they form thermocouples, but these thermocouples measure only relative temperature differences rather than true temperatures.

3,797,311

FLUID LEVEL METER

Robert L. Blanchard, Lexington; Arthur E. Sherburne, Bedford, and Robert A. Williams, Burlington, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.

Filed Feb. 11, 1972, Ser. No. 225,471
Int. Cl. G01f 23/26
U.S. Cl. 73—304 C **29 Claims**



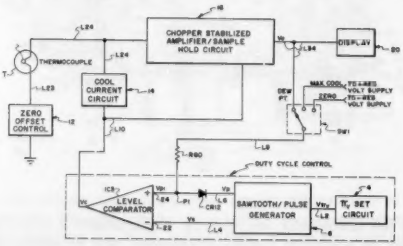
A fluid level meter achieves enhanced accuracy over the opposite extremes of a fluid level range by utilizing a segmented sensing capacitor providing distinct outputs corresponding to adjacent sensing levels within the range and switching from one segment to the other at the extremes. The meter is calibrated for both zero and full scale with the sensing capacitors completely dry. An intrinsic safety barrier is provided between the sensor and the power supply and measuring circuit.

3,797,312

THERMOCOUPLE HYGROMETER AND METHOD

Eric C. Campbell, Providence, Utah, assignor to Wescor, Inc., Logan, Utah

Filed Feb. 14, 1973, Ser. No. 332,540
Int. Cl. G01m 25/56
U.S. Cl. 73—336.5 **14 Claims**



A thermocouple hygrometer and method for determining the osmolality and water potential of small samples wherein

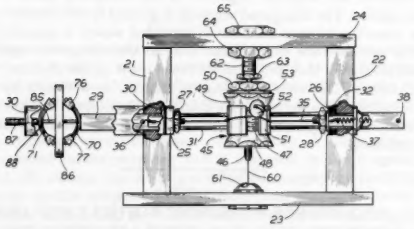
the apparatus comprises a duty cycle control system including a controlled dual output generator, one output of which is set by a control circuit to match the characteristics of the thermocouple being used, and a level comparator which receives, during the DEW POINT mode, at one input a sawtooth wave form voltage from the generator and at the other input a composite of a square wave form voltage from the generator and the amplified voltage across the thermocouple. Thus, the level comparator output duty cycle varies and at any one point in time is established by the potential across the thermocouple. Reading occurs when the sawtooth wave form is high and the output voltage of the comparator is low. Cooling (or heating as may be required) occurs when the level comparator output is high. Accordingly, as the thermocouple potential stabilizes from a higher to a lower value, it will cause a cooling duty cycle to decrease and the amount of read time to increase. Before the generator is utilized, a zero offset control is used to adjust the thermocouple potential to zero under dry conditions. A cool current circuit, during cooling, causes a comparator controlled current to flow to the thermocouple, causing a temperature change at that location. By maintaining a balance of energy into a wet thermocouple with the energy loss at the thermocouple to its surroundings, the temperature change, measured by the thermocouple voltage, is proportional to the actual osmolality or water potential of the sample. The voltage from the thermocouple is communicated to a microvolt meter where it is amplified by a chopper stabilized amplifier. For a brief time interval each cycle, a sample hold circuit holds the previous amplified voltage output, which is displayed and/or recorded on one or more suitable devices. Apart from the DEW POINT mode, the device has a ZERO mode for dry calibration and a MAX COOL mode where the thermocouple potential is not fed to the level comparator, thereby creating a 95 percent cooling duty cycle under control of a generator for accelerating temperature equilibration at the thermocouple.

3,797,313

LINEAR ACTION HYGROMETER

Roy J. Renholts, Oakland, Calif., assignor to Hygrometrics, Inc., Oakland, Calif.

Filed Jan. 31, 1972, Ser. No. 221,891
Int. Cl. G01w *1/00*; **G01n** *19/10*
U.S. Cl. 73—337 **6 Claims**



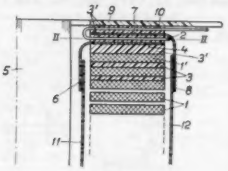
This invention relates to a linear action hygrometer utilizing two or more xeric elements which are sensitive to changes in vapor pressure, i.e., relative humidity, and which bend in a single plane from substantially straight when soaked to a substantial arc when dry, whereby the combined effect of the various elements can give a greater force and move a greater distance than was possible with a single such element.

3,797,314

MEANS FOR DETERMINING THE TOP OIL TEMPERATURE IN TRANSFORMERS

Wolfgang Lampe; Erich Spicar, and Bo-Goran Persson, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed July 10, 1972, Ser. No. 270,437
Int. Cl. G01k *13/02*, *5/32*; **H01f** *27/12*
U.S. Cl. 73—350 **4 Claims**



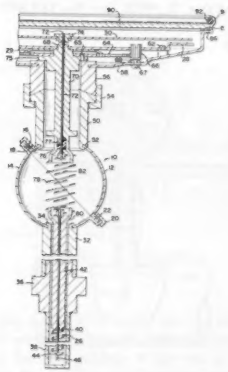
For determining the highest oil temperature in a transformer, a temperature-sensitive transducer in the form of a hollow closed body is arranged adjacent the point in the upper part of the winding where the oil temperature is assumed to be highest and is connected by a conducting tube to a measuring device located outside the transformer. The transducer and the connecting tube are filled with a liquid having a higher coefficient of expansion than the material of the transducer and a boiling point which is higher than the highest permissible oil temperature. The tube has a volume which is small in relation to the volume of the transducer.

3,797,315

REMOTE INDICATING ADJUSTABLE ANGLE INSTRUMENT

Walter J. Halpern, 1119 Crescent St., Sarasota, Fla.

Filed July 6, 1972, Ser. No. 269,389
Int. Cl. G01k *5/70*
U.S. Cl. 73—363.9 **6 Claims**



In a gauge, a case assembly and measuring assembly movable as a unit into and out of the case assembly. The case assembly includes a stem portion adapted to be secured in gauging position, a dial-receiving portion adapted to be secured in read-out position, and angular joint means adjustably securing the stem portion to the dial portion. The measuring assembly includes a bimetallic helix, a dial, a pointer and means including torque springs for moving the pointer over the dial when the helix is subjected to temperature changes. The measuring assembly when moved into the case assembly positions the

helix in the stem portion, the torque springs extending through the angular joint and the dial and pointer in the dial-receiving portion, and a gear for revolving the measuring assembly to reposition the pointer on the dial.

3,797,316

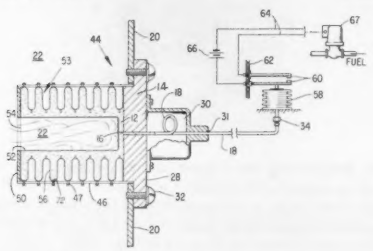
BELLOWS TEMPERATURE BULB SENSOR

Elliott R. Thompson, Sr., Huntsburg, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Filed Dec. 22, 1971, Ser. No. 210,755

Int. Cl. G01k *5/42*

U.S. Cl. 73—368.4 **4 Claims**



A device providing a large heat transfer area for ambient temperature and a small volume of heat sensitive fluid within the bulb. Bulbs with rigid corrugated walls or thin-wall bellows with reinforced convolutions have substantially equal heat-transfer areas exposed to the ambient temperature outside the bulb and to the heat sensitive fluid inside the bulb. Concentric, corrugated or bellows surfaces are used to form the sensing bulb between them and to increase heat transfer area. Concentric bellows are reinforced by a spider assembly allowing flow of sensed ambient to the inside bellows surface.

3,797,317

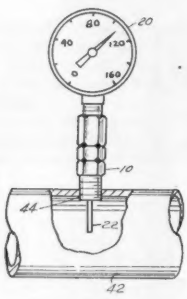
SPLIT VALVE TEST PLUG

Charles D. Peterson, Jr., P.O. Box 217, Richardson, Tex.

Filed Dec. 7, 1972, Ser. No. 312,875

Int. Cl. G01l *19/00*

U.S. Cl. 73—420 **7 Claims**



A split valve pressure test plug is used for high pressure systems of fluids to sense pressure or temperature by means of a test probe. The test probe is connected either to a pressure gauge, thermometer or other sensing device and is received within split valve resilient valve core members in a rigid pressure plug housing. The relilient split valve core members are of a special probe passage construction to receive a test probe through the core in the two split valve members passing through vlave pockets. The split valve construction is comprised of two identical valves working in conjunction with each other. Upon removal of a test probe from a fluid system in which the plug is used, leakage is prevented since one of the split valve closes before the other. Further through the use of a valve retainer in the housing relative movement is provided in one valve upon withdrawal of the probe member through it which will tend to compress the other valve core member which aids in sealing.

3,797,318

METHOD AND APPARATUS FOR COLLECTING AND INTRODUCING A SAMPLE INTO AN ANALYTICAL INSTRUMENT

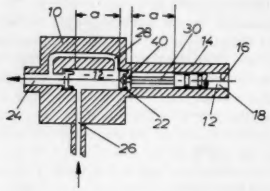
Ernst Palm, Uberlingen, Bodensee, Germany, assignor to Bodenseewerk Perkin-Elmer Co., GmbH, Uberlingen/Bodensee, Germany

Filed Aug. 7, 1972, Ser. No. 278,338

Claims priority, application Germany, Aug. 10, 1971, 2139992

Int. Cl. G01n *1/10*

U.S. Cl. 73—422 GC **19 Claims**



A sample is collected and introduced into an analytical instrument by sorbing the sample with a sorption material which is arranged as a surface of a sampling transportable body, positioning the sampling body in an inlet chamber of the instrument, heating the sampling body for causing desorption of the sample material, and conveying the desorbed material in a carrier stream to an analysis station of the instrument. A sampling collecting device comprises a sampling body including a sorption segment thereof having a surface arranged for sorption of sample material. The sampling body further includes an elongated segment which is coupled to the sorption segment, an annular seal extending about a circumference of the elongated segment and a sealing plug and handle located at an end of the body opposite to that of the sorption surface segment. An apparatus for receiving the sampling device and for introducing the sample therein includes an inlet chamber which is positioned near a guide channel and through which channel the sorption segment of the sampling body is introduced. The elongated segment is guided in the channel and a chamber closure member is provided which is actuated by the device when the annular seal on the elongated segment establishes a leak-proof seal between the guide channel and chamber. The chamber closure member is actuated by the sampling body for causing a carrier gas stream to flow over the sampling body and to convey a desorbed material to the instrument.

3,797,319

PROCESS FOR MEASURING PARTICLE SIZE AND CONCENTRATION OF SLURRIES ACCORDING TO ON-STREAM ANALYSIS

Toshihiko Abe, Sendai, Japan, assignor to Director-General of Agency of Industrial Science and Technology, Tokyo-to, Japan

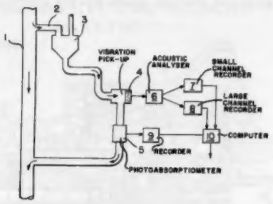
Filed Aug. 8, 1972, Ser. No. 278,816

Int. Cl. G01n *15/00*

U.S. Cl. 73—432 PS **1 Claim**

A process for measuring particle size and concentration of a slurry according to on-stream analysis is provided wherein a

slurry to be measured is impacted at a given velocity against a plate to measure impact energy thereof, simultaneously with light transmission of the slurry being measured, the results of the individual measurements are supplied as information to a



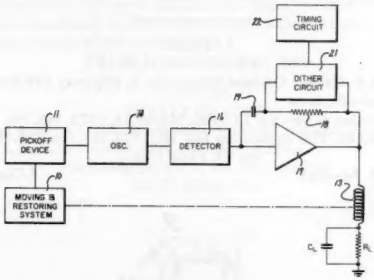
data memory collation device to check the information with data previously stocked in the device, thereby converting the information into the corresponding slurry concentration and average particle size.

3,797,320

ELECTRONIC DITHER CIRCUIT FOR A MECHANICAL BEARING ASSEMBLY AND METHOD AND ACCELEROMETER USING THE SAME

Robert L. Clampitt, Walnut Creek, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Nov. 29, 1972, Ser. No. 310,551
Int. Cl. G01p *15/08*; **G01d** *11/14*
U.S. Cl. 73—496 **17 Claims**



Electronic dither circuit for a mechanical bearing assembly having a housing with a member disposed in the housing. Means is provided in the form of a mechanical bearing assembly for pivotally mounting the member in the housing for movement about a pivot axis. Means is mounted in the housing forming a magnetic field in the housing. A torque coil is connected to the member and is disposed in the magnetic field. Electronic means is provided for supplying electrical energy to the torque coil. The electronic means includes a damped closed loop servo system and means for removing the damping from the closed loop servo to cause the servo loop to oscillate to thereby supply oscillatory electrical energy to said torque coil to cause the torque coil to oscillate and to thereby minimize the effects of friction.

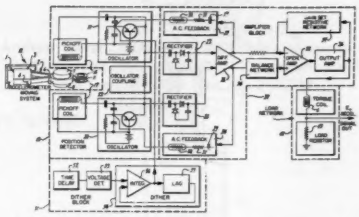
In the method, the damping is removed from the closed loop servo for a predetermined period of time to permit the servo loop to oscillate. The damping is gradually restored to the servo loop over a predetermined period of time. The electronic dither circuit and method are particularly useful in connection with accelerometers.

3,797,321

PIVOT MECHANISM WITH ELECTRONIC DITHER CIRCUIT

Harold D. Morris, Orinda, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Continuation of Ser. No. 47,271, June 18, 1970, abandoned.
This application May 8, 1972, Ser. No. 251,392
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 B **11 Claims**



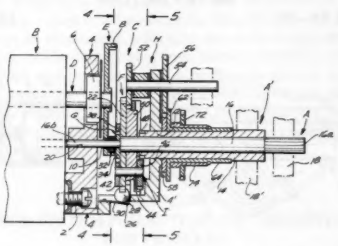
Pivot mechanism with electronic dither circuit having a housing, a member disposed in the housing and means pivotally mounting the member in the housing for pivotal movement about a pivot axis. Means is connected to the member for moving the member about the pivot axis and means is utilized for applying oscillatory transitory movement to the member to minimize friction in the means pivotally mounting the member in the housing.

3,797,322

FINE TUNING MEANS FOR STEP-BY-STEP TV TUNER

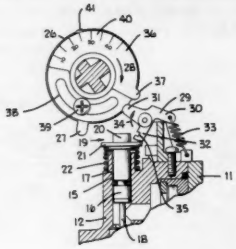
Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed Jan. 23, 1973, Ser. No. 326,146
Int. Cl. H03j *1/08, 1/14*
U.S. Cl. 74—10.54 **22 Claims**



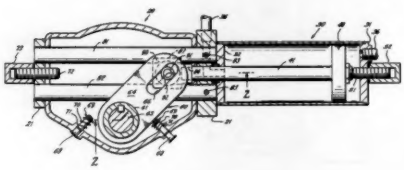
In a tuner for tuning a TV set or the like to a selected one of a plurality of predetermined frequencies or channels, means are provided for fine tuning of the set at a given channel setting, which fine tuning arrangement, although positive in operation and effective to maintain its position as the set is turned from one channel to the next, takes up a minimal amount of space. One of the members which rotates when the channel selection is effected carries a part which is pivotally mounted thereon, and a cam controlled by the fine tuning shaft rotates about an axis displaced from the axis of the member to position that part, which is in turn connected to the output element which drives the tuning device itself thus addition an increment of movement in one direction or the other to the gross meovement produced when the member is moved to effect channel selection.

3,797,323
TIME VARIABLE VALVE APPARATUS
Earl P. Brane, P.O. Box 605, Largo, Fla.
Filed Sept. 5, 1972, Ser. No. 286,458
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 **7 Claims**



A time variable apparatus for controlling a valve. A first and second cam are mounted to a shaft rotatably driven adjacent to a piston which extends outwardly from a frame adjacent to the cams. One cam is operable to force the piston head to a first position whereat a spring biased latch secures the piston in the first position. The second cam is operable to release the latch thereby allowing the piston to move to a second position. The second cam is slotted and receives a fastener extending outwardly from the first cam. The fastener may be loosened so as to adjust the relative rotational positions of the second cam with respect to the first cam thereby allowing for adjustment and control of the duration during which the piston is in either position.

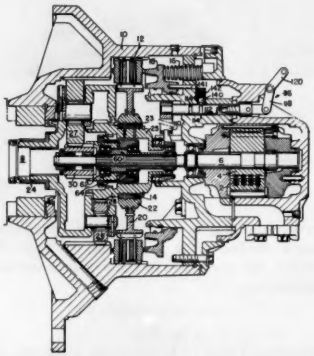
3,797,324
ACTUATOR
John M. Sheesley, Houston, and Ronald A. Gulick, Sugarland, both of Tex., assignors to Research Engineering Company, Houston, Tex.
Filed July 31, 1972, Ser. No. 276,327
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 **10 Claims**



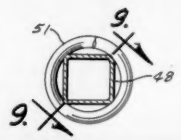
A valve actuator wherein the actuator housing structure includes reinforcing means such as rods capable of resisting forces exerted thereagainst by a force transmission device, such as a yoke and roller.

3,797,325
TWO SPEED PRIMARY DRIVE ASSEMBLY FOR HYDRAULIC WINCH
Sommerville G. Christison, Delta, British Columbia, Canada, assignor to Gearmatic Co. Ltd., Surrey, British Columbia, Canada
Filed June 7, 1971, Ser. No. 150,399
Int. Cl. F16h *3/38*
U.S. Cl. 74--339 **4 Claims**

This invention relates to a two-speed primary drive assembly for a hydraulic winch whereby the winch may be used in either a fast or slow range of speed depending upon the function for which it is used. The primary drive has no neutral position so that the shift is directly from one speed to another and the speed change is done with the winch in a locked or "brake-on" position. The change of gears during a time when the shafts are not free to rotate is made possible by incorporation of cylindrical change gears having every second spline tooth removed and adapted to engage with a shifter sleeve likewise having every second spline tooth removed. The front portion of the splines on both the change gears and the shifter sleeve are chamfered to allow camming of the two elements about their axes when the front portions are axially forced into contact with each other. The change gears are rotationally spring biased such that they are continuously urged to a position whereat the splines are respectively centered.



3,797,326
COIL SPRING WORM SHAFT
George D. Conlee, Colonial House-Apt. 6, Highway 169 South, Humboldt, Iowa
Division of Ser. No. 127,200, March 23, 1971, Pat. No. 3,736,483. This application Jan. 26, 1972, Ser. No. 220,759
Int. Cl. F16h *1/16*
U.S. Cl. 74—425 **5 Claims**



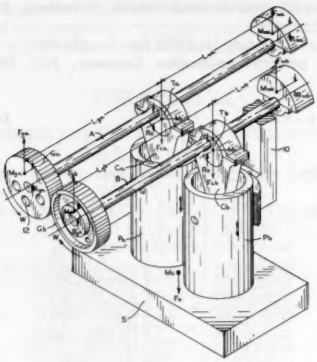
The output shaft of a motor is connected directly to a worm shaft which moves a traveler connected to the door. The motor includes a second centrifugal switch in the relay coil circuit whereby the motor will stop upon the door engaging stops in either direction. The worm shaft includes a length of spiral wire locked in place on thin wall tubing rectangular in cross section. The method of producing the worm shaft includes placing the length of spiral wire on a length of cylindrical tubing and then applying pressure to the tubing between adjacent coils causing corners to be formed which lockingly engage the wire coils. A predetermined axial force in either direction on the motor will cause the motor to move relative to the traveler and actuate an interrupter switch and a reversing switch thereby stopping the motor. Upon the relay coil being reactivated the motor will then move in the opposite direction to the end of the cycle where it will then shut off and be ready to repeat the cycle.

3,797,327

ARRANGEMENT FOR DYNAMIC BALANCING OF A HIGH SPEED PRESS

John E. Voorhees, Sidney, and Donald J. Hemmelgarn, Minster, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Sept. 5, 1972, Ser. No. 286,122
Int. Cl. F16f 15/10
U.S. Cl. 74—604 7 Claims



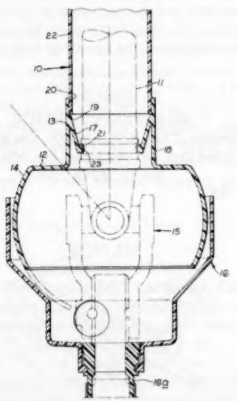
A high speed mechanical press having two parallel counter-rotating crankshafts with a reciprocating slide connected thereto and with off center masses fixed to the crankshafts in distributed relation therealong for counterbalancing the inertia forces developed on the crankshafts by the reciprocating components of the press and the centrifugal forces developed on the crankshaft by off center masses acting thereon at the throw portions of the crankshafts.

3,797,328

SAFETY GUARDS

John Andrew Quirk, Burscough, England, assignor to Atkinson's of Clitheroe Limited, Clitheroe, England

Filed June 21, 1972, Ser. No. 264,730
Int. Cl. F16p 1/04
U.S. Cl. 74—609 7 Claims



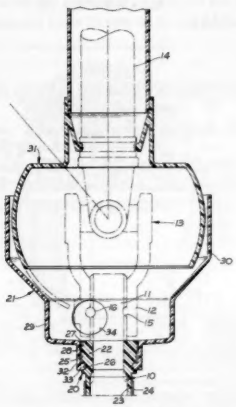
Rotatable shaft drive guard, particularly for power take-off shafts drive connecting a tractor or other prime mover to a trailed or mounted implement, comprises an end formation having a tubular part for surrounding an end of the shaft and a cone or ball shaped part for covering at least part of a coupling, said end formation, which is preferably formed from synthetic plastics material, includes an integral bearing means, typically in the form of a plurality of resilient fringes, for releasable engagement with a bearing formation at the end of the shaft while permitting relative rotation between the shaft and guard.

3,797,329

SAFETY GUARDS

John Andrew Quirk, Burscough, England, assignor to Atkinson's of Clitheroe Limited, Clitheroe, Lancashire, England

Filed June 21, 1972, Ser. No. 264,731
Int. Cl. F16p 1/04
U.S. Cl. 74—609 4 Claims



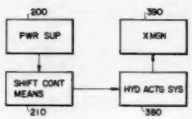
Safety shield for a drive shaft, typically the output or power take-off drive shaft of a tractor or the like which is operatively coupled to an implement, is located on a mounting in the form of a sleeve, preferably formed from plastics material, clamped to the shaft and provided with a peripheral groove or other bearing formation on which a neck portion of the shield is releasably engaged, said engagement permitting relative rotation between the shield and shaft. The shield is preferably also formed from plastics material.

3,797,330

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION FOR VEHICLES

Fmihiro Ushijima, Toyota, Japan, assignor to Toyota Jidosha Kogya Kabushiki Kaisha, Toyotacho, Toyota-shi, Japan

Filed Sept. 23, 1971, Ser. No. 183,044
Claims priority, application Japan, Dec. 1, 1970, 45-106600
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—752 A 13 Claims



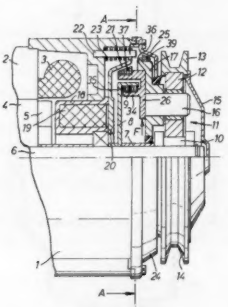
A control system for an automatic transmission which does not employ a manual valve having a plurality of positions for providing communication between fluid passages, but em-

ploys a plurality of solenoid operated shift control valves each having two positions electrically changed over. In the control system, various speed ratios are established by a variety of combinations of the positions of the shift control valves and an electrical switch is changed over to one of a plurality of positions by a shift lever to control the current supplied to the solenoids of the solenoid operated shift control valves. Thus, electrical wiring is solely required for functionally connecting the automatic transmission with the shift lever.

3,797,331
PLANETARY WASHING MACHINE DRIVE WITH CENTRIFUGAL CLUTCH

Per Kjeldsteen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 2, 1972, Ser. No. 259,114
Claims priority, application Germany, June 8, 1971, 2128418
Int. Cl. F16h *5/46*
U.S. Cl. 74—752 E **5 Claims**

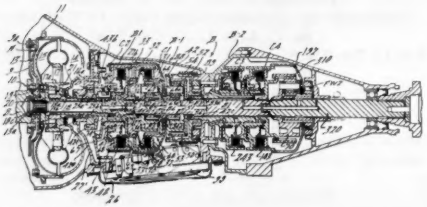


The invention relates to a washing machine drive which comprises a motor and a planetary gear set. In operation the drive is switched from a washing speed to a spinning speed by clutch and brake means having two stages. The clutch means for maintaining the washing speed are associated with centrifugal weights and these brake means do not release until moments after the clutch means for the spinning speed is actuated. The main object is to avoid a mode of operation which involves a sudden pronounced change in the load which has a harmful effect on the machine.

3,797,332
HYDRODYNAMIC TRANSMISSION

Dugald Cameron, Taylor; Robert A. Hoetger, St. Clair Shores, and Ervin R. Miller, Detroit, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 3, 1972, Ser. No. 249,838
Int. Cl. F16h *57/10, 3/44*
U.S. Cl. 74—763 **2 Claims**

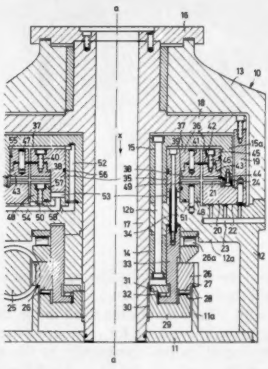


Four forward speed and reverse transmission having three planetary gear sets, four clutches, and two brake bands, certain components of which are substantially identical. The housing for the transmission is in two sections with the rear section containing two clutches and one planetary gear set. The forward housing section contains two clutches, two planetary gear sets and two brake bands.

3,797,333
ROTARY INDEXING MECHANISM

Heinz Maier, Sulzbach, Germany, assignor to Fischer-Brodbeck GmbH Prazisionsteile-Fabrik, Weinsberg, Wurttemburg, Germany

Filed July 21, 1972, Ser. No. 274,062
Claims priority, application Germany, July 28, 1971, 2137698
Int. Cl. B23b *29/32*
U.S. Cl. 74—826 **16 Claims**

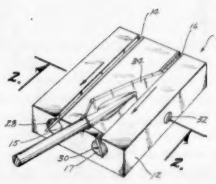


A rotary indexing mechanism comprising a support and a turntable mounted on the support for rotation about its axis. A first crown gear is fixedly mounted on the support coaxial with the axis of the turntable and a second crown gear concentric with the first crown gear is connected with the turntable for rotation therewith. Opposite the first and the second crown gears are two concentric crown gears which are connected by flexible means for simultaneous rotation about the aforementioned axis and slithgly shiftable relative to each other in axial direction. The opposite gears can be moved in axial direction relative to the first and the second gear to bring the teeth out of engagement, permitting turning of the turntable, or to engage the teeth for locking the turntable in its turned position.

3,797,334
SHARPENING DEVICE

Bernard J. Sinclair, 7211 S.W. 11th St., Des Moines, Iowa

Filed Oct. 25, 1972, Ser. No. 300,519
Int. Cl. B21k *5/06*
U.S. Cl. 76—88 **4 Claims**



A sharpening device for sharpening arrowheads, knives and the like comprising a support block having a pair of spaced

apart elongated grooves extending downwardly into the upper end thereof. Each of the grooves communicates with an elongated bore formed in the block. A sharpening means such as a file or the like is positioned in each of the bores and is disposed at an angle with respect to the upper end of the support block. The sharpening means are adapted to sharpen the arrowhead or the like upon the arrowhead being inserted downwardly into the groove and moved along the sharpening means. The grooves define a guide means to properly position the arrowhead in the proper attitude with respect to the sharpening means. A modified form of the sharpening device is disclosed and comprises a triangular shaped sharpening means positioned in a channel formed in the upper end of the support block.

3,797,335

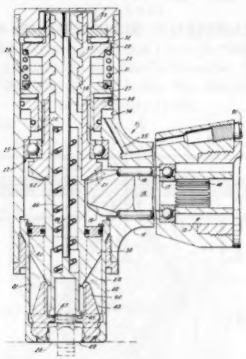
PNEUMATIC NUT RUNNING TOOL WITH GOVERNOR SHUT-OFF CONTROL

Lester A. Amtsberg, and William K. Wallace, both of 2200 Bleecker St., Utica, N.Y.

Division of Ser. No. 138,091, April 28, 1971. This application May 29, 1973, Ser. No. 364,885

Int. Cl. B25b *23/00*

U.S. Cl. 81—10 **4 Claims**



A pneumatic tool provided with combined nut setting and crimping mechanism which responds to rotation of an air motor in one direction to set a nut and responds to rotation of the motor in an opposite direction to crimp the nut. Shiftable valving mechanism is included to direct operating air flow to drive the motor in one direction or the other. A throttle valve is depressible to initiate air flow to the valving mechanism and becomes pneumatically unbalanced against the force of a spring in open condition. A centrifugal motor speed responsive governor valve controls shifting of the valving mechanism and automatic return of the throttle valve to shut-off condition.

3,797,336

QUICK CONNECT NUT

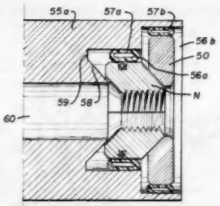
Wilson S. Howe, 1935 Spruce Ave., Longmont, Colo.

Continuation-in-part of Ser. No. 15,613, March 2, 1970, Pat. No. 3,695,139. This application Dec. 6, 1971, Ser. No. 204,977

Int. Cl. B25b *13/02*

U.S. Cl. 81—125 **3 Claims**

A segmented, quick connect nut held together by a resilient ring. The segments spread apart to slip over a threaded bolt or stud. The base of the nut is conical and is mounted against an associated washer having a conical seat to receive the base and jam the segments together whenever the nut is tightened upon the bolt. The nut has a conical cavity at the head end, opposite the base, and the conical seat of a holding tool engages this cavity to facilitate spreading the segments whenever



the nut is being threaded into position upon the bolt. A removal tool spreads the segments to remove the nut from the bolt once it is loosened from its seat in its associated washer.

3,797,337

DEVICE FOR GUIDING A BAR OF A CUTTER OF A PEELING MACHINE

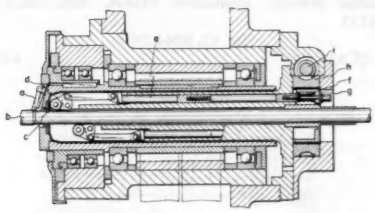
Seishi Muramoto, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho

Filed Jan. 19, 1973, Ser. No. 325,058

Claims priority, application Japan, Jan. 26, 1972, 47/10483

Int. Cl. B23b *5/00*

U.S. Cl. 82—20 **2 Claims**



A device for guiding a bar of a cutter of a peeling machine which has a cutter, plural guide rollers provided behind the cutter, plural links for supporting the guide rollers, plural rods connected through rods to the links, and plural connectors connected at the ends to the first rods; which device has a cylinder composed of the case of the cutter and a sleeve, a piston slidably inserted into the cylinder, an air supply port for supplying compressed air from source of compressed air into the cylinder for acting the piston, said connectors being integrally and rotatably connected axially to the piston, a stopper rotatably connected to the end of the piston, a nut fixed to the end of the connector, a rotary stopper of the nut, an adjusting nut screwed to the case of the cutter for adjusting the stopping position of the stopper. Thus, the work to be cut by the device may be always maintained at correct position at the center of the cutters.

3,797,338

MACHINE FOR MASS PRODUCTION OF BOTH MEDIUM AND SHORT LENGTHS OF TUBING

Michael Molnar, 4381 Valley Forge Dr., Fairview Park, Ohio

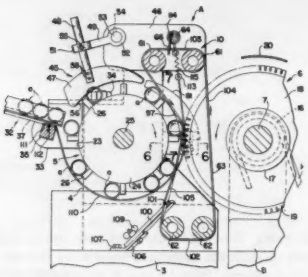
Filed Apr. 7, 1972, Ser. No. 241,956

Int. Cl. B26d *7/06*; **B23b** *5/14*

U.S. Cl. 82—46 **8 Claims**

A versatile high-speed drum-type tube cutting machine having a series of axially spaced endless bands for rotating the tubes and holding them in parallel relation between the radial vanes of the drum and rotary knife means adjacent the drum

for cutting the rotating tubes. The machine can be used to perform multiple cuts during each revolution of the drum and can also be used to effect rapid cutting of very short lengths. In the



latter case the endless band means is skewed to effect axial feeding of the tubes against an adjustable stop near the end of the drum and a rotary knife is arranged to cut one short piece off the end of each tube during each revolution of the drum.

3,797,339

APPARATUS FOR CUTTING GLASS

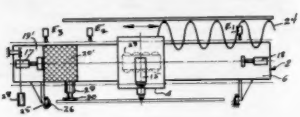
Heinz Pape, and Heinz-Josef Reinmold, both of Aachen, Germany, assignors to Saint-Gobain Industries, Neuilly sur-Siene, France

Filed Sept. 20, 1971, Ser. No. 181,877

Claims priority, application France, Sept. 22, 1970, 7034233

Int. Cl. B26d *3/08*

U.S. Cl. 83—12 **4 Claims**



Apparatus is provided for cutting glass, particularly for cutting sheets from the advancing end of a ribbon of formation, in which the motive power for the scribing tool is a linear induction motor.

3,797,340

GLASS CUTTING DEVICE

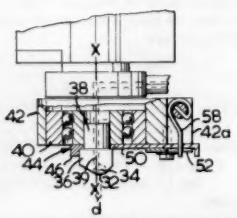
Gordon F. Pereman, Columbus, Ontario, Canada, assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,829

Claims priority, application Canada, Oct. 10, 1972, 153551

Int. Cl. B26d *3/08, 7/26;* **C03b** *33/04*

U.S. Cl. 83—12 **9 Claims**



A scoring machine includes a template and follower assembly for guiding a scoring head along a predetermined path over a work piece to score the work piece along a predetermined path. Means are provided for controlling and damping fish-tailing motion of the castor-mounted cutting wheel thus making it possible to achieve higher scoring speeds than would otherwise be permitted. This "fish-tailing" motion is controlled or damped by means which provides spring biasing of the scoring wheel mount only within the arc necessary for normal operation of the castor scoring wheel; should the castor scoring wheel be inadvertently moved beyond or outside of this arc of normal operation, the damping means is designed such that the spring does not become overstressed or broken and also so that the scoring wheel and its mounting arrangement can readily be pivoted back to the correct position.

3,797,341

METHOD OF AND APPARATUS FOR CUTTING TEXTILE MATERIAL

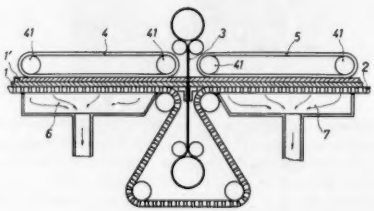
Bruno Bystron, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation-in-part of Ser. No. 80,905, Oct. 15, 1970, abandoned. This application Jan. 11, 1973, Ser. No. 322,698

Claims priority, application Germany, Oct. 21, 1969, 1952852

Int. Cl. B26d *1/10;* **B23d** *55/04;* **A41h** *43/00*

U.S. Cl. 83—14 **5 Claims**



A flimsy sealing surface sheet of silk paper, rough on one side, closely overlies a pack of cloth sheets to be cut, which cloth sheets are supported on an apertured support. The sealing surface sheet is less air-permeable than the cloth sheets and may simply be carried by the pack of cloth sheets, or such sealing surface sheet may be in the form of endless belts located on opposite sides of a cutting implement used for cutting the cloth sheets of the pack. The surface sheet is pressed firmly against the pack of cloth sheets by suction applied through apertures of the sheet pack support.

3,797,342

PRINTED CIRCUIT BOARD WITH PLATED THROUGH HOLES

John Sekel, Cumberland, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

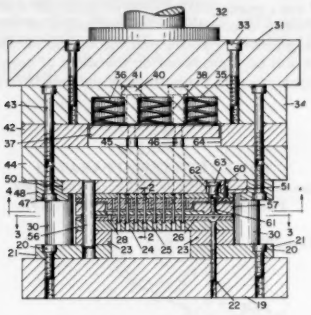
Filed Mar. 22, 1973, Ser. No. 343,714

Int. Cl. B26f *1/14*

U.S. Cl. 83—55 **12 Claims**

A method and apparatus for punching holes in a printed circuit board which are to be subsequently plated. The method utilizes a punch comprising the fluted end of a standard high helix drill which is secured to a punch holder. The drill is sup-

ported by a stripper plate and a guide plate. The stripper plate is held against the printed circuit board by movement of the



punch holder while the drill moves through the printed circuit board, punching and reaming a hole in the printed circuit board.

3,797,343

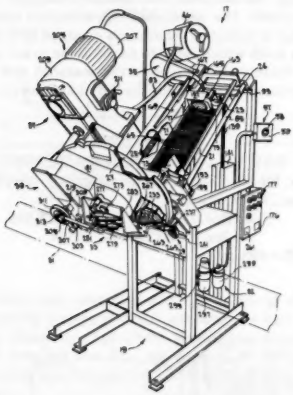
RAPID SLICING MACHINE

Roland E. Miller, Orangeville, and Clyde D. Wayne, Wilmette, both of Ill., assignors to Kraftco Corporation, Chicago, Ill.

Filed May 24, 1971, Ser. No. 146,286

Int. Cl. A01j *21/00*

U.S. Cl. 83—80 **19 Claims**



A method and apparatus for rapidly slicing a mass of material to obtain slices of controlled weight.

3,797,344

ELECTROMECHANICAL APPARATUS FOR CUTTING COILS OF POLYESTER FOAM STRIP OR THE LIKE

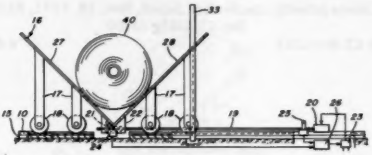
Henry H. Hattman, III, 38 William Dr., Coraopolis, Pa.

Filed Dec. 15, 1972, Ser. No. 315,340

Int. Cl. B26f *3/12*

U.S. Cl. 83—171 **11 Claims**

An electromechanical apparatus for subdividing a coil of polyester foam material into one or more coils. The apparatus includes a carriage with V-shaped support surfaces for supporting the coil. A plurality of wheels extend from the carriage for support by stationary tracks that extend in a direction normal to the axis of the coil. An electrically heated wire is connected at its ends to springs and electric insulators that are carried by a C-shaped frame arranged at one side of the carriage. The springs compensate for length changes of the wire



during heating thereof. The wire extends through a slot in the carriage such that upon displacement of the carriage by a drive means toward the wire, a coil located on the carriage is divided into predetermined widths. A power control circuit is used for heating the resistance wire.

3,797,345

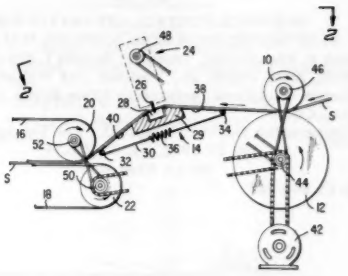
CONVEYORIZED SHEET CUTTER

Philip Allen, Radnor, Pa., assignor to Charles Beck Machine Corporation, King of Prussia, Pa.

Filed Mar. 21, 1972, Ser. No. 236,649

Int. Cl. B26d *7/14*

U.S. Cl. 83—175 **5 Claims**



An improved conveyorized sheet cutter is herein described for cutting a plurality of stacked sheets of thermoplastic material, and the like. A first conveyor is provided for moving stacked sheets of material along a first conveyorized path and an elongated tensioning block is disposed beneath the sheets of thermoplastic material to urge upwardly against the moving material, so as to tension the material. The tensioning block may be formed with a channel for receiving a razor-blade which may be mounted on a second conveyor disposed for movement along the channel, for cutting sheet material held taut across the channel. The first and second conveyor systems are driven through a common drive shaft so as to be mechanically synchronized. As a result thereof, the angle of cutting bias necessary to cut squared off sheets of moving material is constant, regardless of the speed of sheet material travel.

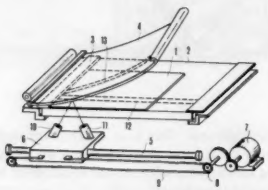
In one form of the invention, a plurality of cords may be provided to extend outwardly from leading and trailing edges of the tensioning block for the purpose of supporting the moving sheet material before and immediately after the razor-blade has cut the sheet. The plurality of cords may take the form of a continuous loop having a resilient member incorporated therein for the purpose of maintaining tension in each of the plurality of cords.

3,797,346

APPARATUS FOR CUTTING A ROLL OF COPYING MATERIAL ACCORDING TO THE LENGTH OF THE ORIGINAL

Shunichiro Kakii, Kugayama, and Satoshi Hisabayashi, Tokyo, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1972, Ser. No. 296,533
Claims priority, application Japan, Nov. 10, 1971, 46/89085
Int. Cl. G03g *15/00*
U.S. Cl. 83—203 **8 Claims**



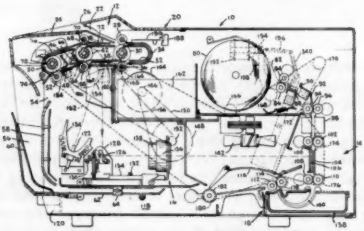
A copying machine is disclosed having an apparatus for cutting a roll of copying material according to the length of an original positioned on a transparent supporting table. The cutting apparatus includes a device for optically detecting the forward edge of the original. The roll copying material and a moving member carrying the detecting device are driven at the same speed. When the edge detector detects the forward edge of the original, the cutter is triggered.

3,797,347

SEQUENCE CONTROL APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Joseph F. Miciukiewicz, Trumbull; Douglas I. Morrison, Norwalk; Philip Pollak, Jr., Westport, and William A. Ross, Darien, all of Conn., assignors to Pitney-Bower, Inc., Stamford, Conn.

Division of Ser. No. 74,737, Sept. 23, 1970. This application July 27, 1972, Ser. No. 275,455
Int. Cl. B26d *5/26*
U.S. Cl. 83—205 **24 Claims**



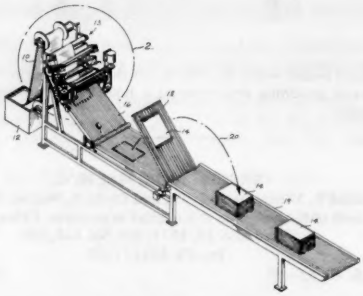
An apparatus for controlling the sequential operation of several functions of a fully automatic electrophotographic copying machine. The copying machine has the capability of projecting an image of indicia on a moving document to a piece of copy paper which is moving in synchronism with the document, and of developing a visible image of the indicia on the copy paper. The disclosed apparatus controls, in response to sensing the leading edge of the document, the energization and de-energization of an illuminating lamp, an electrostatic charger, the commencement of feeding of copy paper, the moment of operation of a severing mechanism for severing a sheet of copy paper from a roll thereof and the feeding of a minimum length of copy paper, regardless of the length of the original document, to prevent pieces of copy paper less than that minimum length from being fed through the machine. The apparatus has features of adjustability which assure that sheets of copy paper will be severed from the roll having a length in exact accordance with the length of the original document, and which assure that the indicia on the original document will be reproduced on the sheet of copy paper in exact accordance with the position of the indicia on the document.

3,797,348

TOWEL CUTTER APPARATUS

Arthur Ronald Moore, 3512 Hilly Ln., Elkhart, Ind.

Filed Jan. 26, 1973, Ser. No. 327,151
Int. Cl. B26d *5/20*
U.S. Cl. 83—209 **8 Claims**



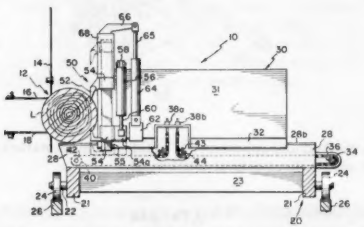
Apparatus for handling an elongated piece of towel material and cutting the material into selected lengths to form individual towels. The towel material is moved across a table surface and at selected locations is engaged by a plurality of comb-like teeth which serve to position the towel material for a cutter blade which traverses the material and severs the material into sections forming the individual towels.

3,797,349

SAWMILL LOG HOLDER ASSEMBLY

Leward N. Smith, Remus, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Filed Dec. 13, 1971, Ser. No. 207,395
Int. Cl. B27b *7/04, 29/08*
U.S. Cl. 83—404.1 **7 Claims**



Apparatus for use in sawing a log including a log holder assembly having opposed upper and lower log-gripping members which are movable between vertically remote, inoperative positions and operative log-penetrating support positions, and incorporating mechanism for positively locking one of the gripping members in vertical position so that the gripping members provide the sole support for maintaining the log at a predetermined elevation while multiple cuts are being taken.

3,797,350

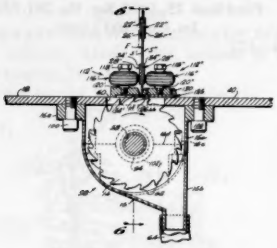
ENVELOPE OPENING APPARATUS

W. E. Orrick, Homestead; William Sottile, and John R. DeHart, both of Coral Gables, all of Fla., assignors to United States Envelope Company, Springfield, Mass.

Continuation of Ser. No. 57,045, July 22, 1970, abandoned. This application July 27, 1973, Ser. No. 383,278

Int. Cl. B26d 1/20, 7/06

U.S. Cl. 83—418 6 Claims



Apparatus for opening letter envelope work items or the like, each having a folded edge margin. A supply of envelope work items are clampingly conveyed in successive order by mating belt means and conveyed transversely across the cutting periphery of a circular cutting element which removes the folded edge margin of each envelope item for permitting access to the envelope contents.

3,797,351

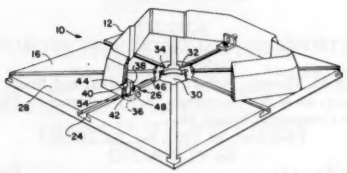
MOUNTING SYSTEM FOR ENVELOPE-DIE HOLDERS

Wilbur M. Jones, Jr., 6909 Lachlan Cir., Baltimore, Md.

Filed Mar. 7, 1973, Ser. No. 338,953

Int. Cl. B26d 1/00

U.S. Cl. 83—698 10 Claims



An effectively self-centering and size-universal envelope-die and mounting system in which envelope dies are secured to mounting plates by clips which engage pre-located apertures in the sides of dies and radial slots in the mounting plates; co-acting aperture locating and hole drilling jigs are also disclosed.

3,797,352

APPARATUS FOR KEYING AND LOCKING ELEMENTS TO THEIR RETAINERS

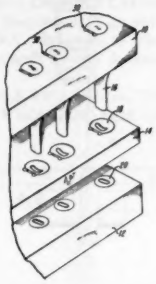
Robert E. Smith, Kettering, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio

Filed Jan. 26, 1973, Ser. No. 326,582

Int. Cl. B26f 1/14; B26d 7/26

U.S. Cl. 83—699 12 Claims

This is a system and apparatus for keying and locking tools and like elements such as punches and die and guide buttons in the appropriate bores of their retainers. The system requires the formation of a flat on the head end of the element to be inserted and locked in a retainer bore while the wall of the bore to position opposite the flat is drilled and reamed, in an axial sense, to provide parallel pin holes which open at one side to the bore. Each pin hole receives a dowel type pin which, however, has a flat along one side portion. The flat on the pin is positioned to be exposed to the bore and to generally face the flat on the inserted tool. The dowel pins are specially designed to include a taper which enables a preliminary non-seated positioning of the respective pins in their holes while the related tool is inserted in the associated bore, whereupon each pin is rotatively positioned as required to abut the flat on the inserted tool. The pins are then driven to a seated locking position referenced to the flat on the tool. The use of plural pins, so formed and utilized, eliminates the need for close tolerance in machining the related parts and insures a precise and simple procedure in the locking of a tool or other element in a desired orientation and place.



3,797,353

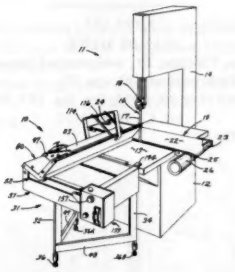
MEAT FEEDING MACHINE

Richard B. Calhan, Warsaw, Ind., assignor to Creative Inc., Warsaw, Ind.

Filed Feb. 18, 1972, Ser. No. 227,357

Int. Cl. B26d 1/28, 4/36, 5/42

U.S. Cl. 83—718 9 Claims



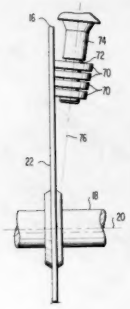
A first slide is reciprocably supported upon a base for horizontal movement past an adjacent saw blade. A second slide is reciprocably supported upon the first slide for horizontal movement toward and away from the saw blade. Meat advancing means is mounted upon the second slide for intermittently moving the meat in small increments toward the saw blade. Actuating means supported upon the base effects said reciprocal movement of the slides so that the second slide moves in a rectangular path. Drive means supported upon the second slide means and the first slide means effects the periodic and incremental movement of the meat advancing means each time the second slide moves through the rectangular path.

3,797,354

APPARATUS FOR DAMPING VIBRATIONS OF A ROTARY CUTTING BLADE

Rudolph L. Allison, Rockford, Ill., assignor to Paramount Textile Machinery Co., Chicago, Ill.

Filed Apr. 24, 1972, Ser. No. 246,654
Int. Cl. B26d *1/14*
U.S. Cl. 83—824 **7 Claims**



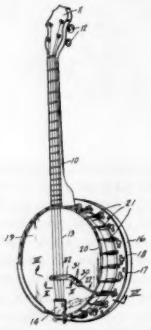
A method and apparatus for damping vibrations of a rotary cutting blade. In one disclosed embodiment, the planar surface of a rotary cutting blade is frictionally contacted by a damping means comprising a plurality of coaxial, independently rotatable disks each presenting a relatively narrow peripheral surface in contact with the planar surface and disposed with the axis of rotation parallel to the planar surface and intersecting the axis of rotation of the cutting blade. In another disclosed embodiment, the damping means comprises an elongated, roller means having a generally frustoconical peripheral surface in frictional contact with the planar surface of the cutting blade. The frustoconical surface may be defined by a continuous surface or by a plurality of spaced coaxial, frustoconical roller segments. The roller means is rotatably mounted with its axis of rotation intersecting the planar surface at the axis of rotation of the cutting blade. Means for adjusting the frictional contact between the damping means and the planar surface are also disclosed.

3,797,355

BANJO MUTE

Clement R. Law, Chicago, Ill., assignor to Clement R. Law and Josiphine F. Law, both of Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,580
Int. Cl. G10c *1/10*
U.S. Cl. 84—273 **2 Claims**



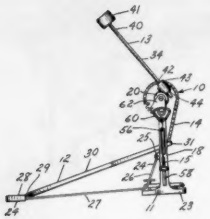
A mute for a banjo or other stringed instrument which includes a frame, a bridge and strings supported on the bridge, the mute comprising an arm which is pivotally mounted with respect to the frame and a resilient pad carried by the arm and arranged to be positioned over the bridge to dampen the vibration of the strings.

3,797,356

LINKAGE FOR FOOT OPERATED BASS DRUM PEDAL

Albert W. Duffy, 44 Garden Pl., Brooklyn, N.Y., and Frank Ippolito, 415 E. 52nd St., New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,738
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 **2 Claims**



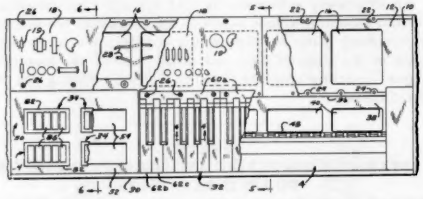
A linkage for driving a foot-operated bass drum pedal in which the conventional leather strip interconnecting the toe end of the pedal and a transversely mounted shaft carrying means for securing the pivoting end of the drum stick is replaced by a sprocket chain engaging a sprocket on said shaft. Coarse adjustment of the length of stroke is obtained by shifting the mounting means on the shaft, and fine adjustment is obtained by shifting the end point of the chain with respect to the particular teeth engaged on the sprocket. The last link of the sprocket end of the chain is secured by pintel or cotter key means extending through one of a plurality of transversely extending holes located at the periphery of the sprocket adjacent the inner ends of the teeth thereof.

3,797,357

ELECTRONIC MUSICAL INSTRUMENT MECHANICAL CONSTRUCTION

Howard M. Thomas; Robert F. Olszowka, and Roger J. McNerney, all of N. Tonawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed Sept. 20, 1972, Ser. No. 290,457
Int. Cl. G10c *3/12*
U.S. Cl. 84—423 **18 Claims**



A mechanical construction for an electronic musical instrument, such as an organ, comprises a one-piece plastic key bed for mounting the keys, the stop tablet assemblies, and printed circuit boards. The keys are made up of a series of one-piece plastic key groups, the keys in each group being hingedly connected to a mounting strip. The keys of each group are alternates, namely non-successive steps in the chromatic scale. However, when the key groups are assembled they provide an octave group, and in such assembly the mounting strips are

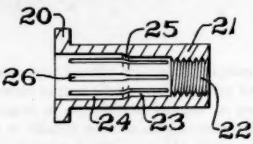
stacked and supported on the key bed such that all of the keys flex or hinge approximately about the same hinge axis. The stop tablet construction comprises a one-piece plastic housing and a number of one-piece plastic stop tablets rockably mounted in the housing and retained therein by keepers on the stop tablets. Protuberances are provided on the housing that cooperate with each stop tablet for retaining each stop tablet in either its "off" or its "on" position.

3,797,358

BLIND FASTENER WITH PRISMATIC BODY

Meredith L. Allender, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed July 25, 1972, Ser. No. 274,852
Int. Cl. F16b *13/04*
U.S. Cl. 85—71 **10 Claims**



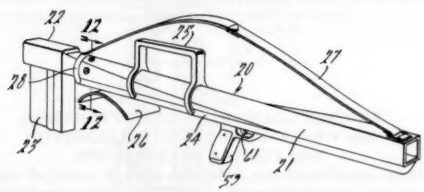
A one-piece blind fastener, of the kind which serves as a nut plate, has a head to bear against the exposed face of a structural member having a hole in it, and a prismatic hollow body having preferably four to six flat faces to pass through the hole. The middle part of the body is divided longitudinally into as many strips as it has faces, and its end remote from the head is internally threaded. The bore of the fastener contains a small step or offset so that the major diameter of bore extends from the outer face of the head to the step, and a slightly smaller diameter of bore extends from the step to the threaded portion. When the fastener is shortened by a pull on a threaded draw rod, the longitudinal strips fold outward at the step and bear firmly against the back or blind face of the structure.

3,797,359

MULTI-FLECHETTE WEAPON

Robert C. Mawhinney, Danville; Alan L. McCone, Jr., San Francisco, and Alvin L. Foote, Livermore, all of Calif., assignors to ME Associates, San Romon, Calif.

Filed Aug. 14, 1972, Ser. No. 280,558
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **11 Claims**



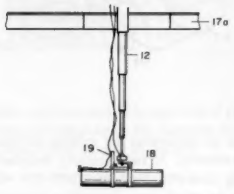
A plurality of flechettes are mounted in a casing or sabot at the forward end of a rocket motor which propels itself, the casing and flechettes through a launching tube. The casing or sabot produces the rotation of the rocket within the tube and separates at the muzzle freeing the group of flechettes which are advanced along a trajectory as the rocket motor drags and falls therebehind. The rotation of the group of flechettes causes them to spread horizontally and vertically and when retained in a rectangular group and released with a vertical orientation the progressive spreading of the flechettes covers twice the area horizontally as they do vertically thereby increasing the striking pattern as the flechette group advances along the trajectory. The flechettes have a rodlike body pointed at one end and provided with a plurality of thin vanes at the opposite ends. This permits the flechettes to be compactly grouped into layers from which they expand as they are advanced, as pointed out above.

3,797,360

TELESCOPING AIRBORN LAUNCH TUBE

Andrew J. Marhefka, Port Norris, N.J., and Martin H. Ravotto, Staten Island, N.Y., assignors to The United States of America, as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 8, 1971, Ser. No. 178,574
Int. Cl. B64d *7/08*; **F41f** *3/06*
U.S. Cl. 89—37.5 D **3 Claims**



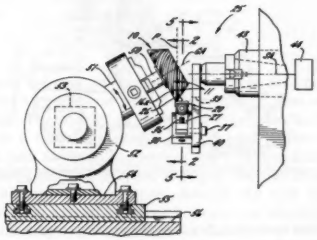
An airborne system for providing means of aerial artillery comprising: guide means securably attached to the interior of a rotary wing aircraft; attachment means slidably connected to said guide means; a telescoping assembly having two ends, one end axially rotatably connected to said attachment means; means for omnidirectional movement, said movement means being attached to the second end of said telescoping assembly; and a launch tube assembly, said launch tube assembly being attachable to said omnidirectional movement means, whereby an artillery shell may be loaded into said launch tube assembly when said launch assembly is withdrawn into the aircraft and further wherein the shell can be fired when said telescoping assembly is extended outside of the aircraft.

3,797,361

METHOD AND MACHINE FOR TOPPING GEAR

Clifton W. Redin, c/o Redino Production Machine Co., 2433 20th St., Rockford, Ill.

Filed Aug. 1, 1972, Ser. No. 276,977
Int. Cl. B23f *19/10*
U.S. Cl. 90—1.4 **9 Claims**

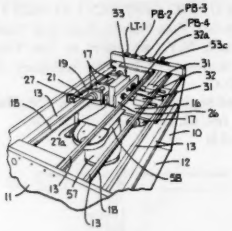


A cutter swings in an arc within a vertical plane and shaves metal from the top edges of a curved tooth gear, the gear being uniquely positioned to enable each curved edge to be presented to a topping position in which the edge approximates both the plane and the arc of swinging of the cutter. The cutter is supported for controlled floating and is spring-urged against the curved edges to conform to the latter and effect a cut of substantially uniform depth.

3,797,362
BOOK SPINE MILLER

Glen B. Heckman, North Manchester, Ind., assignor to The Heckman Bindery, Inc., North Manchester, Ind.

Filed Oct. 2, 1972, Ser. No. 293,840
Int. Cl. B23c 1/06; B42c 17/00
U.S. Cl. 90—19 3 Claims

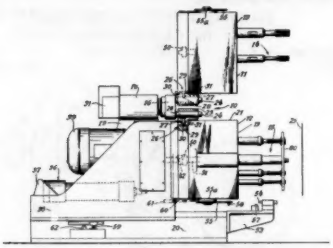


Disclosed is an apparatus for milling off the spine area of a book to be rebound. A rectilinearly moveable table is provided carrying clamping members between which the book is clamped with its spine area extending through an opening in the table, the amount of such extension being determined by an adjustably positionable underlying platform which does not move with the table. A cutter wheel is rotated in a plane parallel to the table and adjacent its underface so that, as the table moves over the cutter wheel, the fabric, staples, glue, etc. on the spine area of a clamped book are removed.

3,797,363
TOOLS CARRYING HEADS, MORE PARTICULARLY FOR TRANSFER MACHINES

Antonin Nohejl, Surbiton, England, assignor to The Mollart Engineering Company Limited, Surrey, England

Filed Nov. 8, 1971, Ser. No. 196,711
Claims priority, application Great Britain, Nov. 16, 1970, 54,422/70
Int. Cl. B23b 39/16
U.S. Cl. 90—26 R 13 Claims

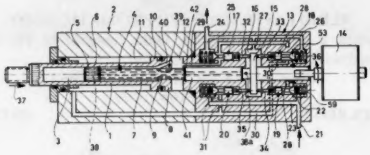


A machine tool includes a tool carrying head which comprises at least two tool carrying units which are interchangeable from an operative position to an inoperative position in which the tools can be changed while the machine is still operating. The tool carrying units are mounted on a common pivot and are interchanged by a pivotal movement about a horizontal axis. The tool carrying unit in the operative position is engaged by a movable structure and is moved slidably forward from the common pivot to its final working position. The movable structure carries a drive motor for the tools carried by the operative unit.

3,797,364
FOLLOW-UP CONTROL APPARATUS

Eckehart Schulze, Rutesheim, Germany, assignor to Hartmann & Lammle OHG, Stuttgart-Bad, Cannstatt, Germany

Filed Dec. 16, 1971, Ser. No. 208,761
Claims priority, application Germany, Dec. 17, 1970, 2062134
Int. Cl. F15b 21/02, 9/10
U.S. Cl. 91—35 26 Claims

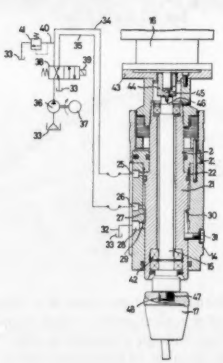


A power amplifying follow-up control apparatus which has a fluid-operated prime mover whose output element can perform translatory or angular movements in response to axial movements of a motion transmitting spindle in a composite housing for two pairs of valves which control the flow of a hydraulic fluid to and from the prime mover. The spindle is threaded to move axially in response to rotation by an electric motor or by hand and to thereby actuate selected valves in the housing in order to regulate the flow of fluid to and from the prime mover whose output member shifts or rotates one or more driven components of a machine tool or the like. The valves which control the outflow of fluid from the prime mover receive such fluid by way of pressure regulating gauges which determine the maximum pressure at which the fluid can enter the respective valves, and the control apparatus employs safety switches which terminate or change the direction of rotation of the spindle when the output member of the prime mover encounters excessive resistance to movement.

3,797,365
RIVETING MACHINE

Seiichi Yoshikawa, No. 11, 2-chome, Morikawachi-hondori, Higashi-osaka-shi, Osaka-fu, Japan

Filed June 21, 1972, Ser. No. 264,987
Int. Cl. F15b 15/22
U.S. Cl. 91—402 1 Claim



A shaft moving device for elevating and lowering an operating shaft in a riveting machine. The device has a cylinder, a cylindrical member slidable up and down in the cylinder and a coaxially and rotatably supporting the operating shaft. The cylindrical member has an annular ring which also serves as a

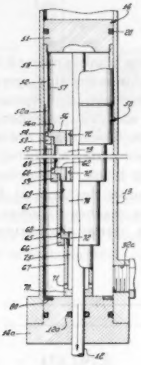
piston. A pump supplies pressure oil to the cylinder. A directional control valve is provided for selectively switching the oil supplied to the cylinder. Upper and lower ports are provided in said cylinder and are connected with the pump through the valve. The cylindrical member together with the operating shaft can be lowered and elevated by the actuation of the valve.

3,797,366

TELESCOPIC HYDRAULIC DECELERATOR

James W. E. Hanes, Ventura, and Edward Larralde, Santa Barbara, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed July 14, 1972, Ser. No. 271,770
Int. Cl. F15b *13/04*
U.S. Cl. 91—404 **12 Claims**



A hydraulic decelerator, particularly useful in a compensator apparatus connected between a travelling block of a well bore rig, mounted on a vessel floating in a body of water, and a hook from which a running string is supported, including a plurality of telescopic sleeves associated with the piston portion of the compensator apparatus and disposed within a companion compensator cylinder, the sleeve having ports or orifices through which hydraulic fluid in the cylinder is forced as the sleeves progressively collapse one within the other during movement of the piston portion within the cylinder, to gradually decelerate over-rapid movement of the piston portion of the compensator apparatus to a desired speed.

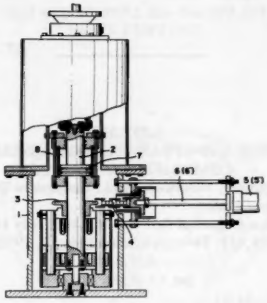
3,797,367

BUFFER DEVICE OF A ROBOT MACHINE FOR CONTROLLING UPWARD AND DOWNWARD MOVEMENT OF A ROBOT ARM

Hisao Fujiwara; Kentaro Sakamoto, and Goro Wada, all of Yokohama, Japan, assignors to Kabushiki Kaisha Keiaisha Seisakusko, Yohohama-Shi, Japan

Continuation of Ser. No. 152,575, June 14, 1971, abandoned. This application May 22, 1973, Ser. No. 362,878
Claims priority, application Japan, June 30, 1970, 45-56453
Int. Cl. F01b *21/00*
U.S. Cl. 92—2 **2 Claims**

This invention relates to a buffer device of a robot machine for controlling upward and downward movement of a robot arm by smoothly and accurately operating the rotational shaft at upper and lower ends of its motion, and which comprises a rotary machine frame rotatably supported on a frame, said frame being rotated integrally with a chain wheel providing rotation to the main shaft, piston rods in the rotary frame being inserted in to blind holes provided on a flat disk rising



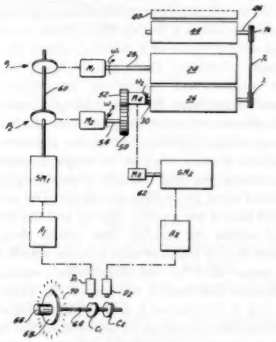
with the main shaft, a piston rod at lower end of the main shaft being inserted into a blind hole at the bottom of the machine frame, and a flat disk being dipped in the oil.

3,797,368

ROTARY BAG MAKING APPARATUS

Fabrizio G. Martelli, 45 Overlook Ter., New York, N.Y.

Filed July 23, 1971, Ser. No. 165,084
Int. Cl. B31b *21/02, 21/14*
U.S. Cl. 93—8 R **21 Claims**



A rotary bag making apparatus of the type used to fabricate bags from a continuous web of thermoplastic film material is described. The apparatus comprises a smooth feed cylinder driven at a constant velocity and adapted to feed the web material past an operating station and a sealing cylinder having a sealing member adapted to engage the web at spaced intervals during each revolution thereof, the web being heat sealed at such spaced locations between the smooth cylinder and the sealing member. Means in the form of non-circular gearing are provided for rotating the sealing cylinder at a constant RPM with a cyclically varying instantaneous angular velocity. The non-circular gearing means rotates the sealing cylinder through a drive shaft and means are provided for adjusting the angular position of the sealing cylinder relative to that drive shaft whereby the instantaneous angular velocity of the sealing member at the moment of sealing engagement with the web may be adjusted. Bag length is adjusted by changing the RPM of the sealing cylinder relative to the smooth feed cylinder, and means are provided for automatically and simul-

taneously adjusting the angular position of the sealing cylinder on the drive shaft by a proper amount to maintain the velocity of the sealing member equal to the velocity of the web at the moment of engagement between the two.

3,797,369

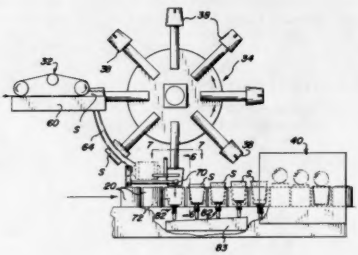
METHOD AND APPARATUS FOR ASSEMBLING COMPOSITE CONTAINERS

Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 162,400, July 14, 1971, Pat. No. 3,759,437. This application Feb. 14, 1972, Ser. No. 225,818

Int. Cl. B31b *1/00*

U.S. Cl. 93—36.01 **7 Claims**



Method and apparatus for assembling a composite container which consists of a cup-shaped inner shell and a sleeve-type overwrap adhesively bonded to the exterior sidewall of the shell. Sleeve blanks are cut to shape, formed into their final configuration and inserted into a cup-shaped recess in a holder mounted upon an endless conveyer. The abutting edges of the inserted sleeve are axially aligned and the sleeve is accurately seated within the holder. The holder then carries the sleeve beneath a cup transfer mechanism which deposits the cup-shaped inner shell of the composite container into the sleeve. Prior to its insertion in the sleeve, the exterior side surface of the cup is coated with a suitable adhesive. After the cup is placed within the sleeve in the holder, the holder passes beneath a cup tamping mechanism which axially presses the cup downwardly into the sleeve to firmly bond the sleeve and cup to each other.

3,797,370

AUTOMATIC CARTON BOX FABRICATING APPARATUS

Tetsuya Sawada, No. 35-24, Chiyohara-cho, Katsura, Ukyo-ku, Kyoto, Japan

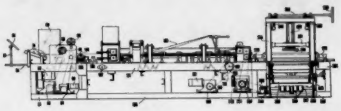
Filed Sept. 15, 1971, Ser. No. 180,616

Claims priority, application Japan, Dec. 28, 1970, 45-130132

Int. Cl. B31b *3/26*

U.S. Cl. 93—51 HW **5 Claims**

An automatic carton box fabricating apparatus. The apparatus has upper and lower endless feed belts conveying blanks supplied one by one therebetween. The endless belts support the lower portions of the parts of the blanks inside the creases on both side walls thereof. Guide members press the upper portions of the parts of both side walls similarly inside the creases thereof, and folding belts fold the portions of both side walls outside the creases thereof over the guide members during the advancement of the blank. A pressing plate presses down the bottom of the blank after the blank stops in a stopping position. At this point the side walls of the blank have been folded double by the guide members and folding belts. Guide rods bending upwards pieces provided on the ends of



both side walls when the blank is pressed down by the pressing plate. Guide members also bending upwards both side walls after each of the pieces is bent upwards similarly during descent of the blank, and guide members also bend upwards both end walls after both side walls are bent upwards during descending of the blank plate. A receiving plate receives the carton made from the blank, supporting the bottom of the blank as it descends under the force of the pressing plate before the pressing plate reaches its lower limit of movement, and a delivery device carries the carton away to a desired place.

3,797,371

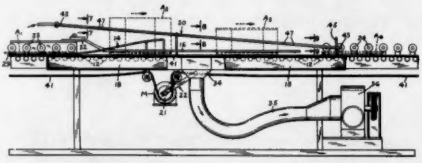
METHOD AND APPARATUS FOR FOLDING A CARTON BLANK

Fred W. Randle, Modesto, Calif., assignor to International Paper Company, New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,586

Int. Cl. B31b *1/42, 1/72*

U.S. Cl. 93—52 **1 Claim**

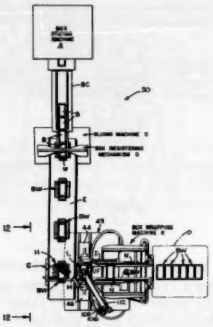


An apparatus and method for folding a planar box blank having a plurality of panels defined by fold lines wherein the blank is continuously moved along a predetermined path by conveyor means, certain of the panels of said blank being held in controlled contact with said conveyor means, and others of said panels being subjected to a plurality of air jets continuously issuing from an air folding rail to cause said last mentioned panels to be folded back into face-to-face relation with those panels in contact with the conveyor means. As the blank moves through the apparatus, a guide rod initiates folding of the blank along the fold lines. As the blank continues on its predetermined path through the apparatus, air jets issuing from the air folding rail continue and complete the folding operation.

3,797,372
BOX WRAPPING MACHINE

Donald W. Shelmire, Churchville, Pa., assignor to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 62,471, Aug. 10, 1970, abandoned. This application Mar. 29, 1972, Ser. No. 239,067
Int. Cl. B31b *15/00*
U.S. Cl. 93—54.2 4 Claims

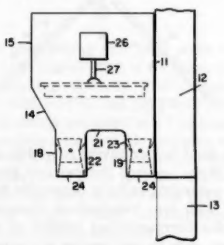


A box wrapping machine incorporating (1) a control system which senses and monitors the presence and/or movement of the box-wrapper units through the machine, and (2) a conveying mechanism for separating and discharging the finished boxes.

3,797,373
AIR CURTAIN

Eugene Larson, Millbrae, Calif., assignor to NPI Corporation, Burlingame, Calif.

Filed July 19, 1972, Ser. No. 273,121
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 3 Claims

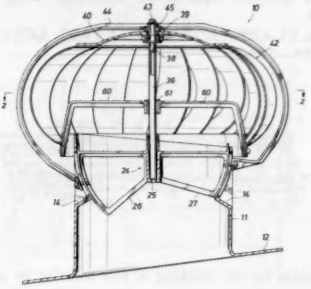


An air curtain primarily for use over a doorway has an enclosure containing motor-driven fans for moving air downwardly through the enclosure. The discharging air travels through venturi boxes mounted to pivot about horizontal axes to direct the discharging air. Flexible strips on the venturi boxes abut the enclosure sides to prevent air leakage in any venturi box position. If desired, deflectors are pivotally mounted in the venturi box outlet, and more than one row of venturi boxes may be used.

3,797,374
TURBINE VENTILATOR

James D. Jones, Houston, Tex., assignor to Wind-Wonder, Inc., Houston, Tex.

Filed Aug. 10, 1972, Ser. No. 279,474
Int. Cl. F23l *17/02*
U.S. Cl. 98—72 14 Claims

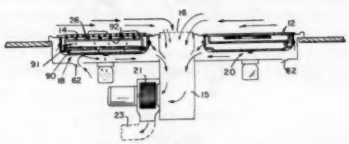


A turbine ventilator adapted to be used with a roof of variable pitch, ranging from flat to about 7/12, which incorporates an upstanding eliptical air pipe which has an internal pair of facing curved surfaces which support matching segments of a movable support base. The support base is connected to a vertical spindle which extends to the top of the turbine where it is braced and supported by four wind braces. The braces support a bushing which, in conjunction with a bearing assembly, supports a rotatable turbine. The rotatable turbine is held rigid by two cross arms which intersect at a bushing which surrounds the shaft at its center portion. The support base for the shaft is adjustable to position the shaft vertically, thereby accommodating variations in pitch. The entire apparatus is preferably formed of plastic, except for the bearing assemblies, nuts, bolts, and other components, to thereby define a structure which is resilient and shock resistant in use and operation. The device can be colored to coordinate with the color of the structure on which it is to be placed.

3,797,375
STOVE WITH SELECTIVELY INTERCHANGEABLE COOKING APPARATUS

Joseph J. Cerola, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.

Filed Mar. 16, 1972, Ser. No. 235,223
Int. Cl. A47j *27/12*
U.S. Cl. 99—340 3 Claims



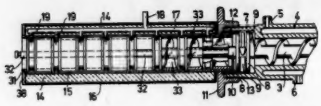
A cooking stove or range adaptable for conversion to provide for different types of food cooking. The stove has an open pan — like recess means in the top thereof adaptable to selectively receive interchangeable types of cooking units or apparatus therein.

3,797,376

APPARATUS FOR COMMINUTING AND COOKING OF RAW MEAT USED FOR THE MANUFACTURE OF COOKED SAUSAGE

Gunter Meyer, Landau, and Ludwig Grebe, Wallau/Lahn, both of Germany, assignors to Kramer & Grebe K.G., Maschinen-und Modellfabrik, Wallau/Lahn, Im Ruttert, Germany

Filed Sept. 3, 1971, Ser. No. 177,617
Claims priority, application Germany, Sept. 7, 1970, 2044228
Int. Cl. A23l *3/22*; B02c *19/12*, *19/22*; A47j *43/04*
U.S. Cl. 99—353 11 Claims



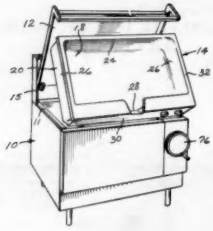
Apparatus for the cooking of raw meat to be used in the manufacture of cooked sausage. Meat subdivided into chunks of convenient size is fed into a pressure creating conveyor, preferably a screw conveyor, and into a comminuting device consisting of cooperating perforated plates and rotating knives. Finely comminuted meat from same is then conveyed directly into a cooking housing. The cooking housing in a preferred embodiment consists of an elongated tubular member having steam jets spaced both axially and circumferentially therein. Conveying means are provided for carrying the meat through the cooking housing which means in a preferred embodiment are comprised of screw flights arranged on a common shaft which is rotated as a continuation of the shaft of the comminuting mechanism.

3,797,377

TILTABLE COOKING PAN

William Lotter, and Frank De Vos, both of South Bend, Ind., assignors to South Bend Range Corp., South Bend, Ind.

Filed May 18, 1972, Ser. No. 254,606
Int. Cl. A47j *37/12*
U.S. Cl. 99—407 8 Claims



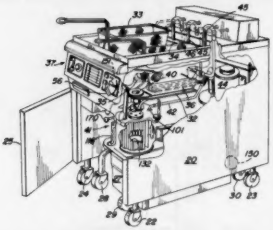
A tiltable cooking pan which is pivotally connected to a support at the front wall section of the pan. A rigid actuator rod has one end pivotally connected to the pan rearwardly and above the pivot connection of the pan to the support. The opposite end of the actuator rod is connected to a slide member which, upon fore and aft shiftable movement relative to the pan and support, causes the pan to be raised and lowered about its support pivot connection.

3,797,378

FOOD FRYER WITH CONTINUOUSLY FILTERED COOKING OIL

Wolford A. Morris, 1508 S. Lincoln, Springfield, Ill.

Continuation-in-part of Ser. No. 30,650, April 22, 1970, Pat. No. 3,648,595. This application Dec. 13, 1971, Ser. No. 207,243
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 7 Claims



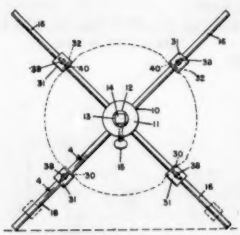
An oil filter is formed from a pair of concentric wire frame cylinders having a cylinder of filter paper positioned between them. The filter paper is preferably made from fiber of 100 percent mercerized wood pulp, saturated by a melamine-formaldehyde resin, which is 30 percent by weight. The preferred paper is 32.0 mils thick with an A.C. oil flow test of 150 secs/1,000cc and a Frazier Air Flow of 2.4 cubic feet per square foot of filter material, at a differential pressure of one-half inch of water. The maximum pore size is such that the bubble point is reached at a pressure of forty inches of water.

3,797,379

BARBECUE MEAT HOLDER

Alison C. Brion, 4706 Sunnyside Rd., Minneapolis, Minn.

Filed May 1, 1972, Ser. No. 249,129
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H 2 Claims



A barbecue meat holder having rotatable spaced hubs with aligning stub shafts secured thereto and groups of four coplanar spokes extending radially outwardly from each of said hubs together with four longitudinal clamping bars slidably mounted on the corresponding spokes of each group and secured at their ends to said spokes at various positions and removable therefrom.

3,797,380

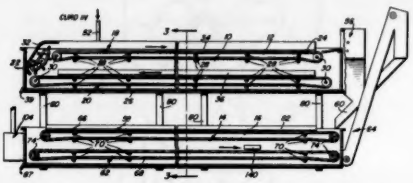
APPARATUS FOR MANUFACTURING CHEESE

William H. Tate, No. 1 Cheddar Ln., Valley City, Ill.

Filed Jan. 28, 1972, Ser. No. 221,645
Int. Cl. A23c *19/02*
U.S. Cl. 99—464 12 Claims

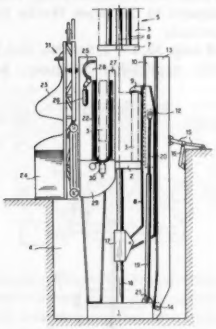
Cheese is manufactured by conveying a separated curd intermittently for at least one cycle about a first closed convey-

ing path until it develops, turning the curd during each cycle, and standing the curd during each cycle until it knits, and conveying developed curd for at least one cycle about a second closed conveying path until it heals. Prior to the healing step, developed curd may be fed to a mill and cut into pieces. Salt



may be applied to the pieces by a blower during each cycle along the second conveying path. Each closed conveying path is formed by a pair of belt conveyors, one arranged beneath the other, and structure for elevating curd from the lower conveyor to the upper conveyor.

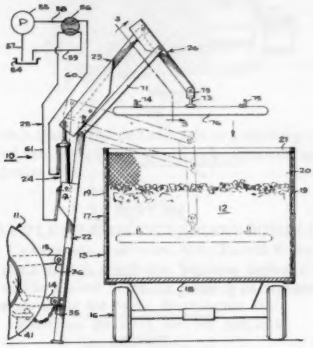
3,797,381
MACHINE FOR COMPACTING AND TYING COILS
Jean E. Glasson, 17, rue des Deserts, Argenteuil, France
Filed Dec. 26, 1972, Ser. No. 318,253
Int. Cl. B65b *13/04, 27/06*
U.S. Cl. 100—12 **4 Claims**



A machine for compacting and tying coils has a vertical frame on which a horizontal plate is fixed for receiving coils with their axes extending vertically. The compacting unit has an elongated arm disposed on the periphery of the plate for each coil, the arms being mounted in a like number of slides and each arm including a top jaw for engaging the top end of one of the coils. The arms are simultaneously moved apart to permit the introduction of coils into the machine and then lowered so that the top jaws compact the coils. A tying unit with tying material supply means, twisting heads and guide channels then ties each compacted coil.

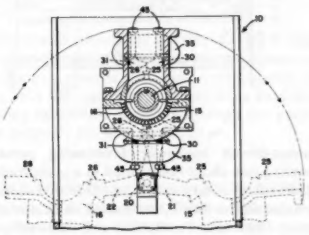
3,797,382
TAMPING APPARATUS
Vincent Muzzi, and Primo Muzzi, both of R.F.D. No. 1, Shaw, Miss.
Filed Feb. 25, 1972, Ser. No. 229,445
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 **5 Claims**

An apparatus suitable for tamping a mass of fibrous material such as raw cotton generally including an elongated support unit adapted to be positioned in an upright position, adjacent a container loaded with such material, a base arm unit pivotally connected to the free end of the support unit, means operatively interconnecting the support unit and the base arm unit for pivoting the base arm unit relative to the support unit, an



extension arm unit pivotally connected to the base arm unit, and a plate unit pivotally connected to a free end of the extension arm unit, the plate unit having a broad contact area for engaging the material being tamped.

3,797,383
SCREW PRESS
Robert M. Sturm, Sidney, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio
Filed Apr. 24, 1972, Ser. No. 246,710
Int. Cl. B30b *3/00*
U.S. Cl. 100—145 **4 Claims**

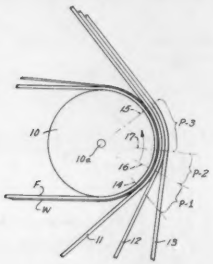


The cage of a screw press is divided into two hingedly separable sections for access to the interior thereof to clean and service the cage and shaft. Complementary clamping surfaces on the cage sections join to form a dovetail flange. The flange is clamped together by a removable clamp to hold the cage sections firmly together. Screws in the clamp drive the clamp and the dovetail flange inclined surfaces together to provide a mechanical advantage in holding the cage sections together.

3,797,384
MULTIPLE BELT PRESS
Donald I. Hoff, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Dec. 20, 1971, Ser. No. 209,941
Int. Cl. D21f *3/00, 5/02*
U.S. Cl. 100—154 **10 Claims**

A press structure for pressing a traveling fibrous web including a support roll with first, second and third belts wrapped

over a portion of the roll and forming an extended pressing zone with the belts engaging each other successively along the



zone so that the pressure will increase with each additional belt applied to the pressing zone.

3,797,385

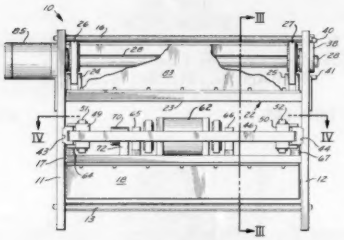
MOTOR-DRIVEN PRESS AND ACTUATING MEANS THEREFOR

Otis Ward Goff, 7151 Carlsbrook, Portage, Mich.

Filed May 10, 1972, Ser. No. 252,099

Int. Cl. B30b *7/04*

U.S. Cl. 100—232 **6 Claims**



A motor-driven hydraulic fabricating press having a reciprocating ram slidably mounted in a press frame and actuated by means of rotary actuators. One or more drive shafts are journaled in the frame, each drive shaft driven by at least one rotary hydraulic actuator, and are coupled to the reciprocating ram by means converting rotary motion into linear motion. Where a plurality of drive shafts is utilized, the drive shafts are coupled to each other by means of a kinematic crank chain.

3,797,386

MARKING SYSTEM WITH ROTARY PRINT DRUMS

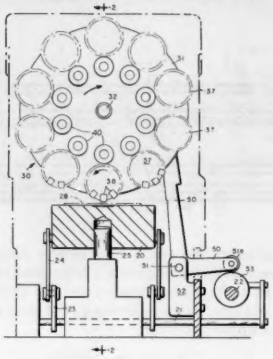
Harold L. Dean, Wellesley, and Vincent Della Penna, Jr., Lexington, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Mar. 27, 1972, Ser. No. 238,131

Int. Cl. B41l *45/00*

U.S. Cl. 101—69 **6 Claims**

A printing mechanism for applying a mark such as a character, geometric figure, etc., to an object such as a cardboard material ticket capable of receiving the mark, the printing mechanism including support means for supporting a plurality of rotatable means, each rotatable means comprising a plurality of marking means supported thereby, indexing means for positioning a selected one of the rotatable means in position to apply a mark to an object to be brought into proximity with said marking means, and control means for relatively moving said marking means and a plurality of objects into proximity to apply a mark thereto, the control means also



rotating said rotatable member to periodically position another of the marking means into position to apply a mark to the object.

3,797,387

HIGH SPEED PRINTER

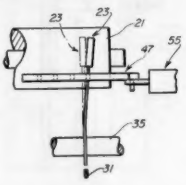
Herbert Decker, Lauf, and Friedrich Jung, Tennenlohe, both of Germany, assignors to Triumph Werke Nuernberg A.G., Nuernberg, Germany

Filed Aug. 30, 1972, Ser. No. 284,741

Claims priority, application Germany, Sept. 10, 1971, 2145245

Int. Cl. B41j *5/14*

U.S. Cl. 101—93 C **4 Claims**



Type characters arranged in columns on a rotatably driven print drum of a high speed printer are selectively impacted by print hammers which are pivotally supported for striking the print drum. Each column of type characters defines a print position along a print line, and the number of print hammers is only a fraction of the number of print positions along the print line. To enable type characters to be printed at each print position, the print hammers are disposed for movement in slots provided in a guide member which is movable parallel to the print line to flex the print hammers sideways to impact type characters of adjacent columns on the print drum.

3,797,388

APPARATUS FOR PRINTING BY REVERSE LITHOGRAPHY

Bernard Kaminstein, Paramus, N.J., assignor to Ing. C. Olivetti & Co., p.A., Ivrea, Italy

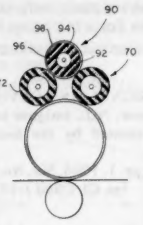
Filed Dec. 7, 1971, Ser. No. 205,522

Int. Cl. B41f *7/36*

U.S. Cl. 101—141 **13 Claims**

A reverse lithographic printing apparatus incorporating a combined inking and fountain roller is disclosed. A water-mis-

cible ink is applied to the surface of an oil loaded, porous inking roller. A mixture of ink and oil is formed which is applied



to the printing master. The oil selectively deposits on the oleophilic background portion of the master while the water-miscible ink selectively deposits on the image areas.

3,797,389

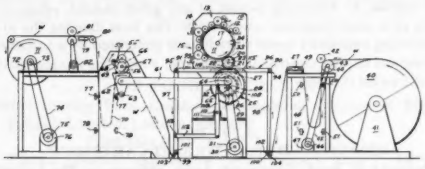
OFFSET PRINTING PRESS

Edwin K. Wolff, Stockholm, N.J., assignor to NJM, Inc., Hoboken, N.J.

Filed Apr. 28, 1972, Ser. No. 248,608

Int. Cl. B41f *13/04, 5/16*

U.S. Cl. 101—228 **12 Claims**



The heavy forces required for transferring the impressions from the blanket to a web at the printing station are provided by intermittently coacting blanket and impression segments which rotate constantly at a uniform speed. The impressions are printed on a translatory moving central portion of an oscillatory loop formed out of the web while such portion is advancing at a speed equal to the peripheral speed of the blanket and impression segments in the direction of feed of the web. The central portion of the web loop is returned with a translatory movement during the intervals that the blanket and impression are not in coactive printing relation. During such intervals also measured lengths of web are advanced through the loop.

3,797,390

INK CARTRIDGE WITH SEALING MEANS FOR RECIPROCAL PRINTING HEADS

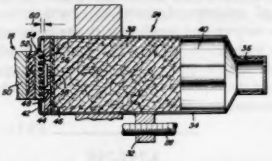
Alfred A. Marozzi, Upper Montclair, and Joseph Fuzia, Nutley, both of N.J., assignors to Bell-Mark Corporation, Bloomfield, N.J., by said Fuzia, a part interest

Filed Aug. 11, 1971, Ser. No. 170,916

Int. Cl. B41k *1/42*

U.S. Cl. 101—333 **9 Claims**

An ink supply for a film marking apparatus from which a fast drying ink is obtained for prolonged periods of time without recharging. Recharging is accomplished by replacement of an ink storage container having a foam-like filler



spaced from a closed end and exposed to a marking device at an open end through a porous pad and a restricted opening in a porous closure disk.

3,797,391

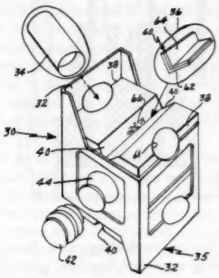
MULTIPLE CHARGE INCENDIARY BOMBLET

Vincent N. Cammarata, Baltimore, Md.; Ronald E. Brown, Altadena, and David R. Garfinkle, Tarzana, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1972, Ser. No. 308,223

Int. Cl. F42b *25/16*

U.S. Cl. 102—4 **3 Claims**



A multiple charge incendiary bomblet having a plurality of shaped charges therein. These charges are composed of a bimetallic lining of conical and linear configuration. Each of the charges have the capability of penetrating hard structures and propelling incendiary particles through the perforations made in the target by the shaped charge jet.

3,797,392

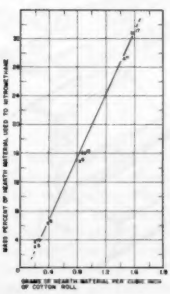
REVERSIBLE SENSITIZATION OF LIQUID EXPLOSIVES

Robert E. Eckels, 2101 Youngfield, Golden, Colo.

Filed Feb. 12, 1973, Ser. No. 331,671

Int. Cl. F42b *3/00;* **F42d** *1/00, 5/00*

U.S. Cl. 102—23 **20 Claims**



Microspheres spacially suspended in a liquid, not normally considered an explosive, cause a propagating detonation in

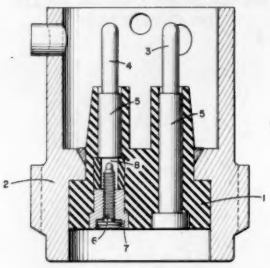
the liquid, and the liquid is reversed to non-explosive configuration by removal of the microspheres. The microspheres are prepositioned in a predetermined quantity in a porous suspending medium, the quantity being sufficient to cause an overdrive of velocity of chemical reaction to detonate the liquid. The suspending medium with the microspheres may be inserted or withdrawn as desired from the liquid, whereby the liquid with the included medium and microspheres will detonate and the liquid without the medium and microspheres will not detonate.

3,797,393

EXPLODING WIRE FUSE COMPONENT

Victor Felix Marchandise, La Jeyne; Elie Louis Signoret, La Crau; Gerard Andre Bal, and Lucien Eugene Barilero, both of Toulon, all of France, assignors to Etat Francais, Paris, France

Filed June 7, 1972, Ser. No. 260,493
Claims priority, application France, June 8, 1971, 71.20630
Int. Cl. F42b *3/12*
U.S. Cl. 102—28 EB **1 Claim**



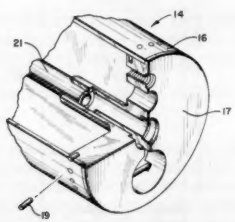
A component for an exploding wire fuse comprising a ceramic body having a pair of laterally spaced metallic pins mounted therein. One of the pins extends only partially into the ceramic body and a metallic adjusting pin is mounted within the ceramic body coaxial with that pin. An adjustable gap is provided between the coaxial pins to permit adjustment during assembly of the threshold potential for energizing the fuse.

3,797,394

CHAFF DISPENSER, METHOD OF DISPERSING CHAFF

James R. Thurston, Brigham City, and Gary V. Adams, Perry, both of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Sept. 11, 1972, Ser. No. 287,954
Int. Cl. C06d *1/04*; **H01q** *15/00*
U.S. Cl. 102—37.6 **10 Claims**



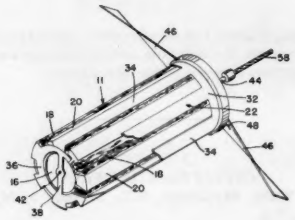
A chaff dispenser for signals and other uses, which ejects from a moving craft and disperses the signal material after a pre-set delay time, comprises an outer case, a canister holding the chaff and explosive charge, a timer, and a parachute. Upon ejection, the timer measures the delay time, releases itself and the parachute which pulls the canister from the outer case. The canister explodes to disperse the chaff. The invention herein described was made in the course of or under contract with the U.S. Air Force (Contract F33657-72-C-0136).

3,797,395

SIGNALLING DEVICE

Jesse F. Tyroler, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 1, 1966, Ser. No. 540,168
Int. Cl. C06d *1/10*
U.S. Cl. 102—37.1 **8 Claims**



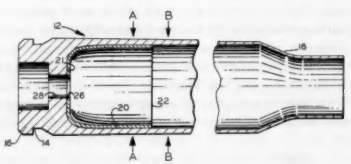
A compact thermal radiation signalling device employing infrared radiations, the device comprising a pattern of alternating high thermal emissivity zones with low emissivity zones, with a similarly patterned squirrel cage rotatable therearound to expose, to detecting means, at any given instant, emissivities of a predetermined wavelength. The heat causing the alternating emissivity zones to radiate is generated by a suitable chemical charge controllably ignitable within the device itself and carried thereby.

3,797,396

REINFORCED LIGHTWEIGHT CARTRIDGE

Frederick P. Reed, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 15, 1972, Ser. No. 234,731
Int. Cl. F42b *5/28, 5/30*
U.S. Cl. 102—43 R **7 Claims**



The firing obturation of lightweight military cartridges fabricated from a material other than brass can be considerably improved by the inclusion of a thin-walled cup in the head portion of the case prior to forming the required exterior taper thereof. Since the cup is fabricated from a more deformable material than that of the case, the tapering of the latter produces radial recovery forces in the mouth of the cup which serve to increase the total pressure imparted to the cartridge case sidewalls by the pressures generated during the firing of the cartridge thereby accelerating the obturation of the case in the firing chamber to a greater degree along the portion coextensive with the cup mouth than along the remainder of the case.

3,797,397

TOOL FOR BALLAST TAMPING MACHINE

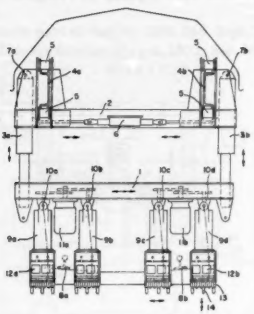
Josef Eisenmann, Rheinstrahe 37, Munich, and Heinrich Helgemeir, Allmannshausenerstrasse 30b, Munich 25, both of Germany

Division of Ser. No. 835,198, June 20, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,442

Claims priority, application Germany, June 24, 1968, 1759950; Nov. 6, 1968, 1807156

Int. Cl. E01b *27/16*

U.S. Cl. 104—12 5 Claims



Railway track ballast compressing and shifting apparatus wherein there is provided at least one vibrating tamper tool acting on the ballast between sleepers for simultaneously compressing and shifting the ballast to fill voids beneath the sleepers.

3,797,398

AIR-CUSHION VEHICLES

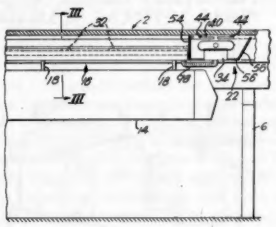
Denys Stanley Bliss, Cambridge, England, assignor to Bliss Pendair Limited, London, England

Filed May 5, 1971, Ser. No. 140,478

Claims priority, application Great Britain, May 7, 1970, 22078/70

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS 33 Claims



In a tracked air cushion vehicle system, the vehicle is supported and/or guided by one or more air cushions formed in a chamber between a wall of the track and a support of guidance platform, the enclosure of the chamber being completed by walls or bogies linked to the platform but movable independent of it, at least in a direction towards and away from the track without having to move with the platform and thus bear loads imposed by it. Both pendulum and non-pendulum forms of suspension are described, and the preferred embodiments of the invention utilize air cushions operating at subatmospheric pressures.

3,797,399

TRIM-CORRECTING FACILITY FOR GROUND EFFECT MACHINES

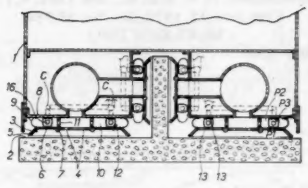
Jean Henri Bertin, Neuilly-sur-Seine, and Francis Marie Jean Croix-Marie, Viry Chatillon, both of France, assignors to Societe De L'"Aerotrain", Paris, France

Filed Mar. 9, 1972, Ser. No. 233,177

Claims priority, application France, Mar. 11, 1971, 71.08487; Feb. 8, 1972, 7204125

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS 12 Claims



An air cushion suspension system for a ground effect machine comprising in combination a movable disc bearing cushion-containing means and balanced by the cushion pressure acting on one side of the disc and by an opposing pressure acting on the opposite side of the disc, the opposing pressure existing in a deformable suspension chamber in which a tubular air chamber is disposed, the tubular air chamber being adapted to be inflated to a pressure above the opposing pressure and to bear against the disc to provide extra stiffness in the suspension.

The flexible wall of the tubular air chamber is, in the balanced state and with the machine operating normally, clear either of the disc of the suspension chamber wall opposite the disc, so that the extra stiffness is introduced into the suspension only with effect from a particular amount of deformation of the disc suspension chamber, the tubular air chamber forming a kind of resilient abutment.

3,797,400

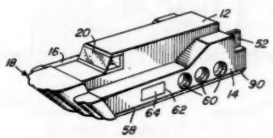
MONORAIL SYSTEM INCLUDING CONVERTIBLE AIR CUSHION VEHICLE PROVIDED WITH VERTICALLY RETRACTABLE WHEELED RUNNING GEAR

John Van Veldhuizen, Rt. 1, Estill Springs, Unionville, Tenn.

Division of Ser. No. 62,033, Aug. 7, 1970, Pat. No. 3,710,887. This application Nov. 9, 1972, Ser. No. 305,113

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS 11 Claims



A monorail system including a monorail structure and a monorail vehicle having powered supporting wheels for rollingly supporting the vehicle from the monorail. In addition, the vehicle is of the air cushion type defining an air cushion chamber therebeneath and the powered wheels of the vehicle also serve as axial flow blowers for supplying the necessary air, after initial forward speed of the monorail vehicle has been obtained, to the air cushion defining chamber beneath the vehicle for supporting the latter by means of an air cushion between opposing surfaces of the monorail structure and the vehicle. Also, the powered supporting wheels

which define axial flow blowers are supported from the vehicle for vertical shifting relative thereto, with the front wheels being steerable, whereby the vehicle may be driven at low speeds over a generally horizontal surface in the manner of a conventional motor vehicle.

3,797,401

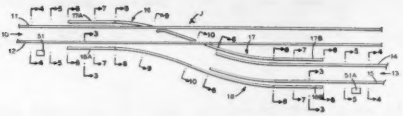
AUTOMATIC SWITCHING SYSTEM FOR PROPELLED CARRIERS

Mihai Alimanestianu, 70 W. 40th St., New York, N.Y.

Filed June 12, 1970, Ser. No. 45,754

Int. Cl. E01b *25/12*

U.S. Cl. 104—130 **9 Claims**



An automatic switching system for carriers propelled along a main line at a selected speed, including switching track and cooperating switching wheels on the carriers for effecting high speed switching operations to transfer the propelled carriers between the main line and the switching track.

3,797,402

MAGNETICALLY SUSPENDED RAILWAY SYSTEM

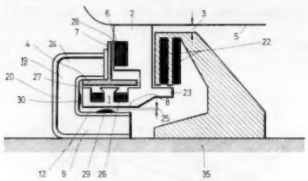
Ludwig Karch, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed May 3, 1971, Ser. No. 139,355

Claims priority, application Germany, May 5, 1970, 2021834

Int. Cl. E01b *25/08*

U.S. Cl. 104—130 **29 Claims**



In the magnetically suspended railway system disclosed, magnetizable carriers suspended from under each side of a railroad car, support lift and traction magnets and side-to-side guide magnets which are electrically controlled to move along the underside and upright of an inverse-T shaped magnetizable rail mounted from the tops of stationary C-shaped rail supports. Slide surfaces on the rail supports, which are more closely spaced to the carriers than to the car bottom, hold up the train at the carriers in the absence of magnetic force. At switch areas where the rails diverge into two pairs, stationary lift magnets engage the carrier and guide the car along the desired direction. Interlaced non-touching fingers magnetically couple the carriers from one car to the other.

3,797,403

POWER ELECTROMAGNETIC SUSPENSION AND GUIDE SYSTEM FOR VEHICLES

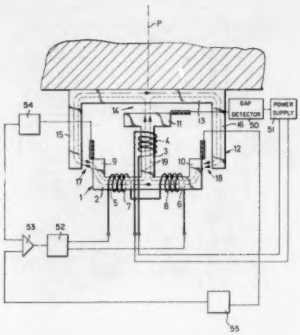
Peter Schwarzler, Furstenfeldbruck; Gerhard Bohn, and Helmut Schauberger, both of Munich, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed June 30, 1972, Ser. No. 268,133

Claims priority, application Germany, July 9, 1971, 2134425

Int. Cl. B61b *13/08*

U.S. Cl. 104.148 MS **9 Claims**



An electromagnetic suspension and drive system, e.g., for a floating personnel carrier or other vehicle, wherein a T-section armature is carried by the vehicle and is provided along its shank with a magnetic suspending coil and along the crossbar of the T with a pair of magnetic guide coils and connected and arranged through the latter coils provided oppositely effective horizontal forces and operate in aiding relationship with the suspending coil. The magnetic flux path is closed through a U-shaped channel whose flanges flank the crossbar of the T and receive the armature between them while defining lateral and vertical air gaps with the armature.

3,797,404

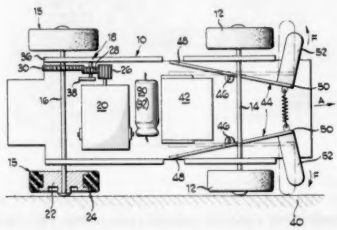
SYSTEM FOR OPERATING MINIATURE VEHICLES

Gordon A. Barlow, and Norman Kramer, both of Skokie, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 31, 1973, Ser. No. 328,464

Int. Cl. B60m *1/34*; **B61b** *13/12*

U.S. Cl. 104—149 **8 Claims**



A system for operating electrically propelled miniature vehicles along a roadbed having side-by-side current conductive lanes with substantially flush tread surfaces and for remotely controlling the vehicles in a manner to turn out and pass one another at the will of the operator as the vehicles are transferred freely from one lane to another. The vehicles are driven by propulsion motors mounted on the vehicle body, for

operating one or more driving wheels. Lever type flippers are mounted on the sides of the vehicles for movement outwardly in engagement with bordering side walls along the outer edges of the outermost lanes to urge the vehicle toward the opposite lane in response to a surge of current through a solenoid mounted on the vehicle and operatively associated with propulsion motor and the flippers.

3,797,405

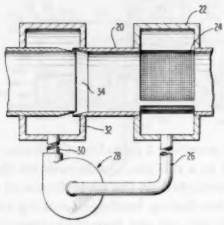
MASS TRANSPORTATION SYSTEM

Marion R. Carstens, Atlanta, and Homer J. Bates, Roswell, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Continuation-in-part of Ser. No. 856,566, Sept. 10, 1969, abandoned. This application May 4, 1971, Ser. No. 140,071

Int. Cl. B61b *13/12*

U.S. Cl. 104—155 **16 Claims**



A mass transit system for use in moving a load carrying vehicle along a predetermined route between a number of load handling stations. The mass transportation system includes an unobstructed tube transport means located along the predetermined route. A vehicle provided with antifriction support is conveyed through the tube transport means by the momentum of driving air provided by one or more pumping devices which extracts a fraction of the air flow and substantially immediately reintroduces the air into the tube to create or restore the necessary air momentum. The tube may be continuous or non-continuous and is characterized by uniform cross section and the fact that it provides the support for the vehicle. The vehicle is shaped in cross section so as to substantially fill the cross section of the tube but not completely, so as to allow driving air to flow continuously within the tube even though the vehicle may be traveling at a speed substantially less than the mean velocity of the driving air, as on acceleration or deceleration of the vehicle. The vehicle body is also shaped to provide high drag characteristics so that it may travel within the tube at substantially the same velocity as the driving air. Loading and unloading stations are provided in the system in open communication with the ambient atmosphere, thereby allowing ease of loading and unloading. Each of the pumping devices used for delivering the driving air to the tube transport means is positioned between loading and unloading stations and is capable of producing a high mass rate of air flow at very low static pressure and the loading and unloading stations for the vehicle are positioned at points within the tube system where the static pressure is at or near atmospheric pressure.

3,797,406

TOW LINE TRUCK AND BRAKE SYSTEM

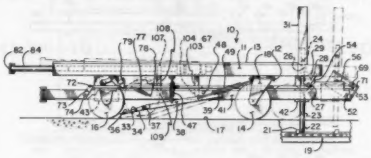
Richard M. Biessener, Faribault, Minn., assignor to Nutting Truck and Caster Company, Faribault, Minn.

Filed Feb. 2, 1972, Ser. No. 222,799

Int. Cl. B61c *11/00*

U.S. Cl. 104—172 BT **17 Claims**

A truck for tow line use is provided with an improved brake system designed to stop the truck in response to engagement of a front bumper of the truck against an obstacle, while minimizing the force applied by the truck and bumper to the obstacle. The truck includes at least one brake member having a bottom floor-engageable surface and an upper wheel-engageable surface, with brake support means on the truck which supports the brake member in front of at least one of the wheels for relative movement between a retracted position ahead of the wheel and a braking position in which the brake member is engaged beneath the wheel. The brake support means includes a relatively light longitudinally movable brake



support member, and the front bumper is movably mounted thereon rather than directly on the truck itself. Control means responsive to engagement of the front bumper with an obstacle stops the forward movement of only the brake and its support member. Thus the wheel runs onto the brake member with a resulting cessation of forward motion due to the action of the brake member and weight of the truck, rather than the resistance of the obstacle. An anti-back-up device prevents premature rearward movement of the wheel and truck from the brake member. The truck also includes means for releasing the anti-back-up device.

3,797,407

DEVICE FOR HAULING VEHICLES WITH RETRACTABLE WHEELS HOLDING DOWN THE TRACTION CABLE

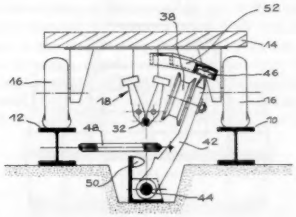
Roger Laurent, Chambery, France, assignor to Poma 2.000 S.A., Fontaine, France

Filed Dec. 8, 1972, Ser. No. 313,398

Claims priority, application France, Dec. 24, 1971, 71.46685

Int. Cl. B61b *7/10, 7/20*

U.S. Cl. 104—182 **7 Claims**



The invention relates to a device for the hauling of vehicles by a traction cable extended along the track.

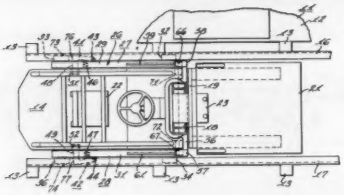
The cable supporting and guiding wheels in the way of vehicles path, are fixed to mobile supports, the movement of which into a retracted position being imparted by the vehicle itself.

3,797,408

LIFT TRUCK STABILIZING APPARATUS

James R. Barber, Homewood, and Thomas J. Finlayson, Palos Hills, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 12, 1973, Ser. No. 340,175
Int. Cl. B61f 9/00
U.S. Cl. 104—246 13 Claims



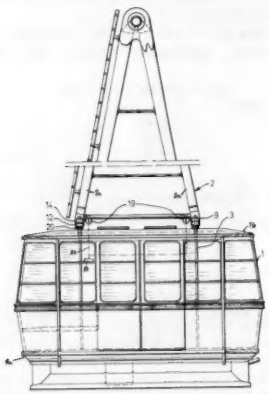
A lift truck is stabilized in the aisle of a material storage facility by a pair of trolleys which travel on parallel horizontal guide rails on opposite sides of the aisle. Releasable connecting means engage the lift truck as it enters the aisle to latch the trolleys to the lift truck as it operates within the aisle. On movement of the truck from the aisle the latch means automatically operate to disconnect the trolleys from the lift truck, the trolleys staying on the guide rails in the material storage facility.

3,797,409

RESILIENTLY SUPPORTED AERIAL CABLEWAY CAR

Anton Frech, Schongrund 21, 4600 Olten, Switzerland

Filed Nov. 26, 1971, Ser. No. 179,836
Int. Cl. B61b 3/00, 7/00, 7/10
U.S. Cl. 105—148 6 Claims



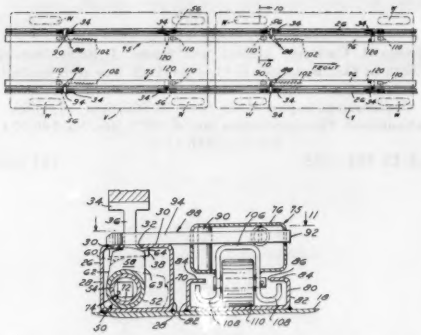
A cabin arrangement for an elevated transport system or cable car, such as an overhead railway or aerial cableway, wherein the resilient suspension device thereof is provided with at least one elastic pressure cell or pressure pickup means which completely or partially takes-up the weight of the cabin, and this pressure cell is connected with an indicator device.

3,797,410

LOADING AND SECUREMENT SYSTEM FOR RAIL CARS

Donald J. Blunden, Southfield, Mich., assignor to Whitehead & Kalis Company, River Ridge, Mich.

Filed June 13, 1972, Ser. No. 262,234
Int. Cl. B60p 7/08; B61d 45/00
U.S. Cl. 105—368 R 18 Claims



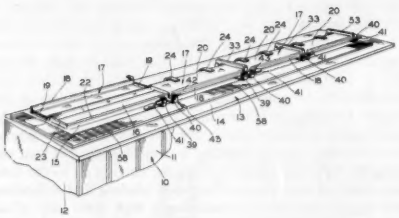
Apparatus for securing a plurality of vehicles on the deck of a transport such as a rail car. Guide rails on the deck are engaged by shoes mounted on the underframe of the vehicles to guide the vehicles during loading. Locking means operable from outside the rail car are provided simultaneously to engage the shoes and secure the vehicles on loaded position. The transport is loaded by moving it up to a loading dock which has shoe guide rails adapted to align with the guide rails on the rail car. A loader guided both on the dock and on the transport has dogs engageable with the shoes to advance the vehicles from the dock to the transport.

3,797,411

TROUGH HATCH OPERATING ARRANGEMENT

Ernest J. Nagy, Munster; William R. Shaver, Griffith, and Ronald W. Marsh, Michigan City, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,905
Int. Cl. B61d 39/00
U.S. Cl. 105—377 8 Claims

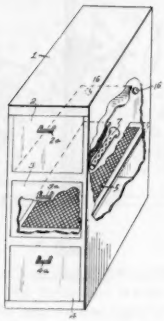


A hopper type railway car is provided with a longitudinally extending hatch opening having a plurality of longitudinally spaced covers movable from open to closed positions. The covers are adapted to overlie rectangular coamings defining each of the openings, with said covers being hingedly connected to the roof of the railroad car and including operating means for moving the covers laterally, initially from a closed position, thereby disengaging locking means whereby the covers may then be hingedly moved to open position. The operating means is actuated by holddown members which provide leverage for initiating a caming mechanism effective to provide for said lateral movement and also seal and lock the covers in a closed position.

3,797,412
APPARATUS FOR DESTRUCTION OF DOCUMENTS

Vincent J. DiPaola, Elkton, and Ralph H. Allen, Churchville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 29, 1971, Ser. No. 184,755
Int. Cl. E05g 3/00
U.S. Cl. 109—29 **4 Claims**

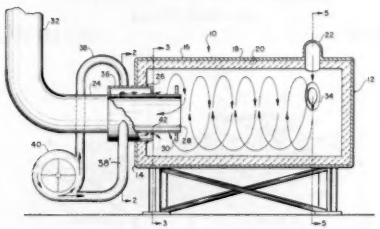


Apparatus and a method for fully destroying papers, packaged paper and other documents or combustibles in a safe.

3,797,413
INCINERATOR

Syed Aejaz Ali, and Orval Austin Doherty, both of Shelbyville, Ind., assignors to General Electric Company, Indianapolis, Ind.

Filed Apr. 23, 1973, Ser. No. 353,427
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R **10 Claims**

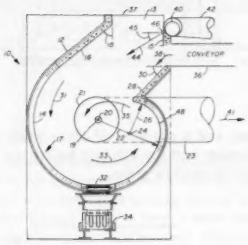


An incinerator for burning waste material having a combustion chamber comprising spaced end walls and a side wall through which a mixture of waste material and air is vortically moved and burned. The incinerator combustion chamber includes an exhaust flue port passing through one end wall to exhaust combustion gases, comprising a flue pipe extending substantially coaxially with the chambers longitudinal axis. The flue pipe is provided with a surrounding annular plenum chamber supplied with cooling gas which is discharged from the plenum chamber and flows over the surface of the section of the flue pipe within the combustion chamber.

3,797,414
CANTED VORTEX OPEN PIT INCINERATOR

Mary E. Ahrend, 1116 E. Ninth St., Ada, Okla.

Continuation-in-part of Ser. No. 85,094, Oct. 29, 1970, Pat. No. 3,713,402. This application Jan. 19, 1973, Ser. No. 325,204
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R **11 Claims**



This disclosure describes an open pit incineration system for solid waste and refuse. It comprises a longitudinal chamber, the lower portion of which is substantially semicylindrical in shape, with two substantially parallel, sloping walls to an open top. A supply of high pressure air is provided and issues through a horizontal longitudinal slit orifice in the form of a continuous sheet of rapidly moving air. The slit orifice is mounted on top of the lower of the two walls and the air is directed across the gap between the two walls at an angle below the horizontal. The action of the high velocity sheet of air is to completely close off the top opening of the combustion chamber to the emission of products of combustion and to force them into a helically moving vortex of flame, hot air and products of combustion within the lower portion of the chamber. A grate is provided in the bottom of the chamber for receiving materials that are incapable of complete combustion. The hot gases resulting from the combustion are withdrawn axially from one or both ends of the chamber through a conduit to a heat exchanger for the generation of steam and the cooling of the hot gases, which then proceed by way of an electrostatic precipitator through the stack.

The input to the combustion chamber comprises shredded solid waste material, metal and ceramic particles which are carried by means of a horizontal conveyer along the edge of the lower wall and are dumped into the combustion chamber underneath the curtain of air issuing from the slit orifice.

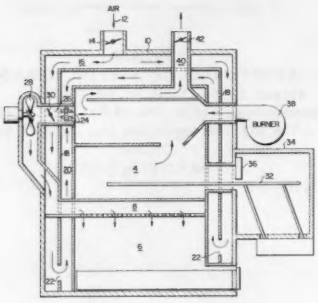
3,797,415
INCINERATOR WITH A PLURALITY OF OUTER WALLS AND A HOLLOW GRATE

John Young, Jr., Plymouth Rd., Lexington, Mass., and Barry Paul Maguire, 10 Hartsuff St., Rear, Rockland, Mass.

Filed Oct. 30, 1972, Ser. No. 301,748
Int. Cl. F23g 5/12
U.S. Cl. 110—8 C **8 Claims**

An incinerator having a post-combustion chamber elevated over a pre-combustion chamber, an oil or gas burner in the

post-combustion chamber, a perforated hollow grate at the bottom of the pre-combustion chamber, an ash box below the



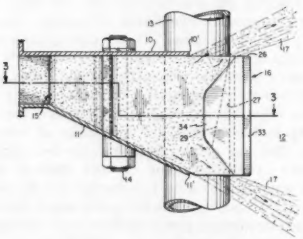
hollow grate, and a plurality of outer walls around the combustion chamber and the ash box having air passages therein connected to the hollow grate.

3,797,416

SELF-LOCKING TUBE PROTECTOR AND DEFLECTOR BLOCK FOR BOILER TUBES

Glenn H. Lawson, 701 E. Main St., Madison, Ind.

Filed Apr. 10, 1973, Ser. No. 349,749
Int. Cl. F23c *5/00*
U.S. Cl. 110—28 R **8 Claims**



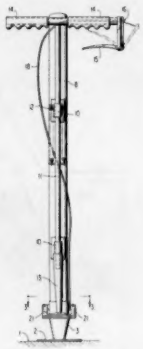
Self-locking tube protectors and deflector blocks are provided for protecting boiler tubes in the path of fuel injected between upper and lower fuel inlet plates having studs aligned with the tubes on the fuel inlet side thereof. A pair of cooperating tube protector sections are shaped at adjacent one ends thereof to substantially encircle a tube when installed. The inner surfaces of the protector sections have cooperating grooves to fit a stud, and tongue and groove means for locking the inlet ends of the sections together when installed. A deflector block fits over the tube ends of the protector sections and overlaps the crack between the ends. Mating tapered ear and groove joint sections are provided at the tube ends of the protector sections and on the deflector block for clamping the sections firmly against the tube when the block is installed. The deflector block has a recess on one lateral side and a tongue on the other predetermined to overlap the tongue and recess of deflector blocks on adjacent tubes when installed.

3,797,417

PLANTING DEVICE FOR TREE SEEDLING PLUGS

Philip F. Hahn, Eugene, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Sept. 25, 1972, Ser. No. 292,118
Int. Cl. A01c *1/02*
U.S. Cl. 111—4 **13 Claims**



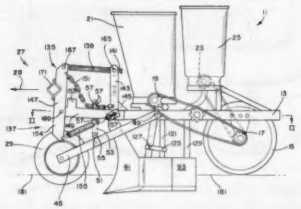
A manually operated tree planting device has a frame, including a base which has an aperture and is adapted to be placed against the soil, and a planting assembly that is transversely movable. The planting assembly includes a dibble and a planting tube, either of which may alternatively and selectively be aligned with the frame aperture. The dibble is first aligned with the aperture and inserted therethrough into the soil and then withdrawn to form the planting hole. Then the planting tube is aligned with the frame aperture such that a seedling may be dropped through the tube and aperture into the prepared hole.

3,797,418

MINIMUM TILLAGE PLANTER

Floyd R. Bridger, Jr., P.O. Box 836, Jonesboro, Ark.

Continuation-in-part of Ser. No. 16,468, March 4, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,732
Int. Cl. A01c *5/06*
U.S. Cl. 111—73 **5 Claims**



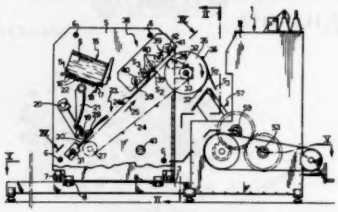
A device used to plant seeds into soil or sod which received no prior breaking or preparation, i. e., plowing, disking, or the like. The apparatus includes a unique, forward-orientated disk coulter, an intermediate-oriented seed opener which allows for uniform depth seed placement, a rearward orientated fertilizer opener for placing fertilizer into the sod opening a distance from each side of the placed seeds and a pair of trailing press drive wheels for driving the seed and fertilizer agitators and for pressing the sod substantially back to its original density, thus assuring positive seed to soil contact.

3,797,419

AUTOMATIC MACHINE FOR FEEDING AND SEWING SIGNATURES IN BOOKS

Lorenzo Depetris, Casale Monferrato, Italy, assignor to Smyth Europea S.p.A., Casale Monferrato (Alessandria), Italy

Filed July 13, 1973, Ser. No. 378,864
Claims priority, application Italy, July 18, 1972, 69329/72
Int. Cl. B42b 1/02
U.S. Cl. 112—21 11 Claims



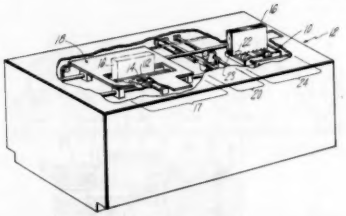
A book sewing machine having an incorporated automatic feeder is disclosed. The automatic feeder has two stacks of signatures and acts to remove one signature from each stack simultaneously. The two signatures are both opened and then placed directly astride a sewing saddle of the sewing machine. The sewing saddle carries means for adjusting the spacing of the two signatures, and means for holding the two signatures in place as the sewing saddle moves to the sewing position where the two signatures are both sewn in one operation and then passed for further processing. One embodiment incorporates an automatic paster which applies paste to the signatures adjacent their backbones prior to placing them on the sewing saddle.

3,797,420

THREAD OVERWRAP MECHANISM

Daniel I. Streeter, Glastonbury, Conn., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.

Filed May 24, 1973, Ser. No. 363,666
Int. Cl. B42b 1/02
U.S. Cl. 112—21 12 Claims



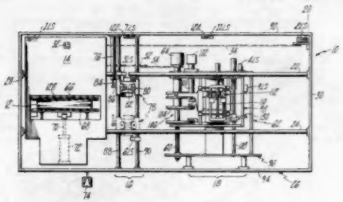
Mechanism usable with a book cleat sewer which is actuatable upon completion of thread sewing across a cleat in the spine of a book being sewn to positively ensure thread overwrap completely about the last end sheet in the cleat being sewn.

3,797,421

BOOK SEWING MACHINE HAVING REVERSING BOOK CLAMP AND TRANSPORT SLIDE

Guy L. Sanderson, Glastonbury, Conn., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.

Filed May 24, 1973, Ser. No. 363,667
Int. Cl. B42b 1/02
U.S. Cl. 112—21 14 Claims



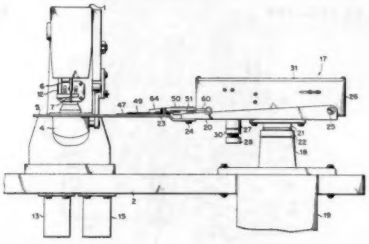
Book making machine featuring a reciprocating book clamp and transport slide for conveying a book with its spine down to a saw station and a downstream sewing station to saw dovetailed slits across the book spine to form a book cleat and then lace thread through the pages of the cleat. This machine provides for the cleat forming and sewing in a single pass of the book clamp and transport slide between a home position upstream of the saw station and a reversing station downstream of the sewing station.

3,797,422

WORK PIECE FEEDING DEVICE FOR SEWING MACHINES OR THE LIKE

Katsuaki Sakawa, Chiryu, Japan, assignor to Brother Kogy Kabushiki Kaisha, Nagoya-shi, Japan

Filed Dec. 23, 1971, Ser. No. 211,455
Claims priority, application Japan, Dec. 24, 1970, 45-127573; Dec. 25, 1970, 45-125651; Dec. 26, 1970, 45-138362
Int. Cl. D05b 3/12
U.S. Cl. 112—104 5 Claims



A feeding device for feeding a work piece to the throat plate of a sewing machines wherein a feed plate for feeding a work piece from its received position is kept floating relative to its support by resilient means, so that the work piece is smoothly supplied to the sewing machine.

3,797,423

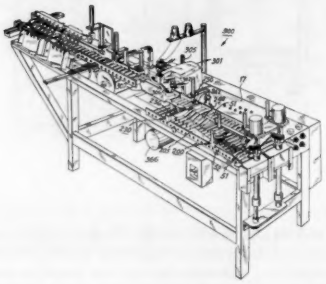
FABRIC TURNOVER, MATING AND SEWING DEVICE

Enrique Lopez; Robert D. Spidle, and Aubrey Glenn Beazley, all of El Paso, Tex., assignors to Farah Manufacturing Company Incorporated, El Paso, Tex.

Division of Ser. No. 44,710, June 9, 1970, Pat. No. 3,611,961. This application Oct. 1, 1971, Ser. No. 185,729The portion of the term of this patent subsequent to Oct. 12, 1988, has been disclaimed.

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.11 **22 Claims**



A device for conveying, inverting, mating and sewing garment workpieces is disclosed which senses the presence of a first workpiece near a first position, raises and captures the leading end of the first workpiece thereby permitting conveyor rollers covered with an elastomeric material to sweep the following end of the first workpiece under the captured leading end, releases the captured leading end of the first workpiece after an appropriate delay period whereafter the first work-piece is conveyed to a second position, senses the presence of the first workpiece at the second position and the presence of a second workpiece at a third position, holds and aligns the second workpiece at the third position, moves the first workpiece from the second position over a ramp onto the second workpiece at the third position, releases the held workpieces and urges them toward a sewing area, and sews the two work-pieces together.

3,797,424

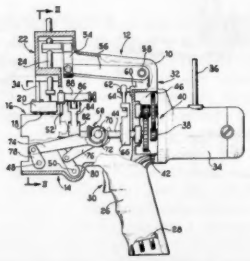
BUTT END STITCHING MACHINE

Giuseppe Renzo Cerioni, Milan, Italy, assignor to El Cu S.p.A., Milan, Italy

Filed Oct. 12, 1971, Ser. No. 187,952

Int. Cl. D05b *1/20*

U.S. Cl. 112—169 **1 Claim**



A butt end stitching machine adapted to carry-out sewing and cutting operations on fabrics and having a one-piece structure within which all machine operating components are arranged. A gun handle is provided in order to grip, direct and operate the machine. The operating components are arranged within the structure in such a manner that the handle lies on a vertical line extending through the center of gravity of the entire machine.

3,797,425

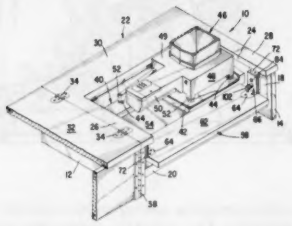
SEWING MACHINE CABINET

Robert S. Peets, Watchuung, N.J., assignor to The Singer Company, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,667

Int. Cl. D05b *75/00*

U.S. Cl. 112—217.1 **5 Claims**



A sewing machine cabinet adapted for use with free arm type sewing machines having a sewing machine support platform including a recessed lower support surface. The cabinet includes a front rail pivotable 180 degrees between a flat bed position in which the top surface of the rail is coextensive with the top of the cabinet and a second position in which the bottom surface of the rail is coextensive with the lower work support surface. A pair of brackets are secured to opposite sides of the bottom surface of the rail and are journaled on studs supported on brackets on opposite sides of the cabinet. A spring biased plunger device is provided on at least one side for locking the rail in either the flat bed or cylinder bed position.

3,797,426

CONTROLLED THREAD TENSIONER FOR SEWING MACHINES

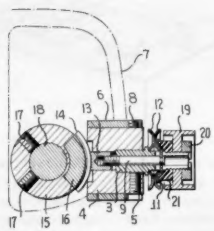
Wolf-Rudiger Von Hagen, Grotzingen, Germany, assignor to Union Special Maschinenfabrik G.m.b.H., Stuttgart, Germany

Filed Mar. 31, 1972, Ser. No. 240,208

Claims priority, application Germany, Apr. 22, 1971, P 21 19 592.6

Int. Cl. D05b *47/04*

U.S. Cl. 112—254 **6 Claims**



This disclosure relates to a controlled thread tensioner for sewing machines which includes a pair of oppositely movable tension discs, one of which is under the influence of a control

bolt, and which control bolt has a portion thereof positioned adjacent a permanent magnet carried by a control shaft of the sewing machine for automatically shifting the position of the control bolt in timed relation to the operation of the sewing machine so as to vary the tension applied to thread by the tension discs.

3,797,427

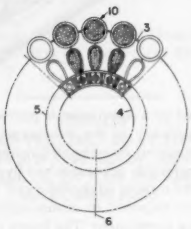
CIRCULAR EMBROIDERY-LACE ARTICLES

Othmar E. Metzler, Cliffside Park, N.J.

Filed May 5, 1972, Ser. No. 250,700

Int. Cl. D05c *3/00*

U.S. Cl. 112—266 **9 Claims**



An embroidery-lace article in the form of an annular motif including an outer circumferential edge, an inner circumferential edge shorter than the outer circumferential edge and a relaxed elastic thread located adjacent the inner circumferential edge. The article is manufactured by embroidering the motif along an essentially straight line with the elastic thread pretensioned to the length of the outer circumferential edge and subsequently relaxing the elastic thread to enable contraction of the thread to draw the motif into a curved configuration.

3,797,428

METHOD FOR MAKING CORNER OR EDGE PLATES FOR CASES, PACKING, CONTAINERS OR OTHER RECEPTACLES AND A PLANT FOR CARRYING THROUGH THE METHOD

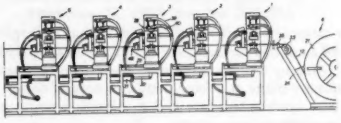
Hans Elov Nordgren, PL 4322, S-82800, Edsbyn, and Per Klockarns, PL 2292, S-82200, Alfta, both of Sweden

Filed Mar. 15, 1972, Ser. No. 234,836

Claims priority, application Sweden, Mar. 29, 1971, 4051/71

Int. Cl. B21d *49/00*

U.S. Cl. 113—1 R **34 Claims**



This disclosure has to do with the forming of fittings for wood containers and the like from continuously fed strip material. Mechanism is provided for performing various stamping and working operations on this strip material in a manner to keep pace with the movement of the strip material and after each work operation is performed on the strip material, the tool performing the work operation is returned to its initial position and subsequent performance of a further work operation.

3,797,429

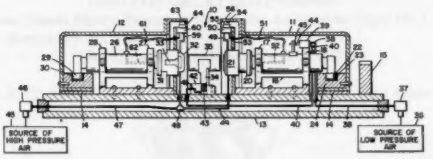
METHOD AND APPARATUS FOR NECKING AND FLANGING CAN BODIES

Wayne F. Wolfe, Belmont, Calif., assignor to United Can Company, Hayward, Calif.

Filed Feb. 22, 1973, Ser. No. 334,692

Int. Cl. B21d *41/00*

U.S. Cl. 113—1 G **6 Claims**



A cylindrical can body is positioned between axially aligned necking and flanging dies which are forced together so that the dies force the can body ends completely into and onto the dies to neck and flange the can body ends. The dies are then pulled apart, with the can body being first clamped to the flanging die to pull the necked end of the can body from the necking die. The can body is gripped and held between its ends to allow the flanging die to be then pulled off the flanged end of the can body.

3,797,430

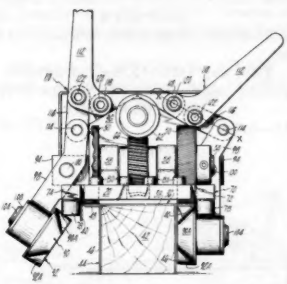
SEAMING TOOL

Robert Joseph Boudreau, South Windsor, Conn., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.

Filed Nov. 2, 1972, Ser. No. 303,133

Int. Cl. B21d *39/02*

U.S. Cl. 113—55 **7 Claims**



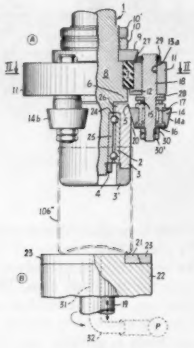
A pair of rollers are arranged in tandem below a frame movable along a piece of sheet material for progressively bending an elongated flanged edge of the sheet material into interlocking folded relation to an underlying sheet member. The rollers are pivotally supported on the frame for swinging movement toward and away from the frame between an operative position, wherein the rollers are disposed for a sheet bending operation, and a retracted rest position.

3,797,431

METHOD OF MANUFACTURING THE BODY OF A NECK-IN CAN AND AN APPARATUS USED THEREFOR

Takayuki Yoshimura, Tokyo, Japan, assignor to Daiwa Can Company Limited, Tokyo, Japan

Filed July 5, 1972, Ser. No. 269,275
Claims priority, application Japan, Aug. 6, 1971, 46-59019
Int. Cl. B21d *51/26*
U.S. Cl. 113—120 AA 4 Claims



In the manufacture of the body of an ordinary neck-in can, the metal blank obtained from the metal sheet is subjected to drawing and ironing to form a cylindrical body with a bottom end, which is then subjected to trimming along the peripheral edge of the upper opening whereby the burr projected from the edge by trimming is crushed down before said cylindrical body is passed to the subsequent step. An apparatus for crushing down the burr is also provided.

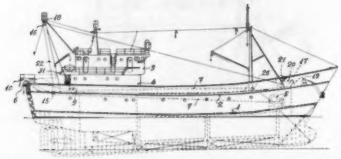
In this apparatus the burr is crushed down by means of the relative rotary movement between said cylindrical body having the burr formed and a roller provided for breaking down said burr.

3,797,432

BOAT FOR STERN FISHING WITHOUT A RAMP WITH TWO DECKS

Javier Rey Mermudez, Avda-Primo de Rineo, 1-13°, La Coruna, Spain

Filed Aug. 16, 1972, Ser. No. 281,208
Claims priority, application Spain, Nov. 26, 1971, 397399
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 A 11 Claims



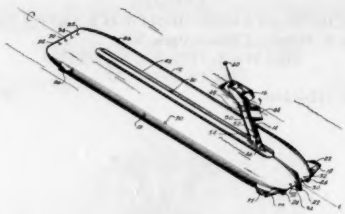
The subject of the present invention consists of a boat for fishing from the stern, without a ramp, with two decks, which represents something completely new and different in fishing boats for stern fishing as they are now known and used, and which, in spite of being of small tonnage, has the advantages of a large refrigerator ships.

3,797,433

SUBMARINE STABILIZATION

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasedena, Calif.

Filed Nov. 1, 1971, Ser. No. 194,753
Int. Cl. B63g *8/16, 8/18*
U.S. Cl. 114—16 R 7 Claims



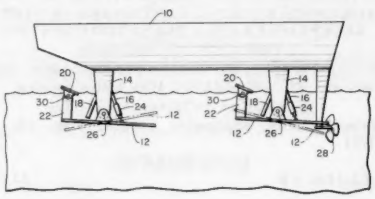
The sail or mast of a submarine is provided with means to overcome the tendency of the submarine to roll as a consequence of wave action, heaving and during turns. Submarine stabilization is preferably accomplished by means of a plurality of rudders at the trailing edge of the sail. The upper rudders provide the force required to compensate for roll, but introduce a steering component. The lower rudders turn in the opposed direction to about an equal degree to cancel out the steering component introduced by the upper rudder. Rudder compensation for roll may be augmented or supplanted by the use of fluid ejection ports vertically disposed along the port and starboard sides of the sail in the vicinity of the trailing edge of the sail.

3,797,434

HYDROFOIL CONTROL MEANS

Lyle E. Matthews, 3412 Minna St., Oxnard, Calif.

Filed Sept. 25, 1972, Ser. No. 292,030
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H 2 Claims



An attitude control for a primary lifting hydroplane in the form of a control surface attached to the forward tip of the primary plane by a vertical support. The control plane maintains the primary plane at a fixed depth. Hydraulic dampers including stops control the rate and maximum amount of angular motion of the primary plane.

3,797,435

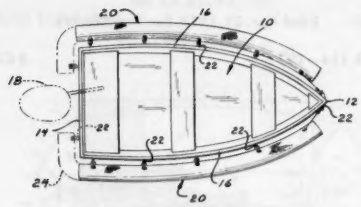
EMERGENCY FLOATATION APPARATUS FOR WATERCRAFT

Marcus H. Dunson, 15112 S. Halsted, Harvey, Ill.

Filed Oct. 27, 1971, Ser. No. 193,014
Int. Cl. B63c *9/02*
U.S. Cl. 114—68 8 Claims

Emergency floatation equipment for watercraft. The invention contemplates an inflatable, elongated float, which may be secured to the side of a watercraft and of sufficient size, when

paired with a similar float secured to the opposite side of the watercraft, is capable of supporting the same. A unique attachment system is contemplated whereby the weight of the



boat is substantially evenly distributed along the length of the inflatable float regardless of the weight distribution of the boat.

3,797,436

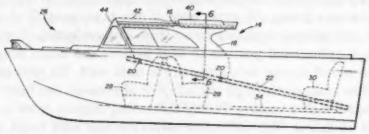
CONVERTIBLE BOAT TOP

Richard D. Moore, 920 B Ashbridge Dr., Essex, Md.

Filed Jan. 24, 1973, Ser. No. 326,292

Int. Cl. B63b *29/02*

U.S. Cl. 114—71 **5 Claims**



A convertible boat top is composed of a lightweight material and is designed to assume a plurality of positions on an open boat with a windshield assembly. In a forward position against the windshield assembly, the boat becomes a cabin boat. A slidable hatch on the top permits the tops of the cabin to be closed in bad weather and open in sunny weather. The top may be moved to a rear position with the hatch in the forward position thereon to provide a sleek runabout having an aft deck. With the hatch moved rearward on the rearwardly positioned top, seats in the boat are uncovered for use.

3,797,437

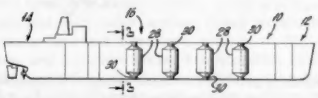
WATER BALLAST ARRANGEMENT FOR EXTERNALLY INSULATED TANKERS

Walter C. Cowles, Cobham, England, assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 22, 1971, Ser. No. 200,984

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 A **9 Claims**



An arrangement of internal water ballast tanks for an externally insulated tanker wherein the ballast tanks are suitably sized and located within the cargo carrying midbody of the tanker so as to permit loading a quantity of sea water ballast to provide for satisfactory operation and sea kindliness of the ship. The ballast tanks preferably have a cylindrical configuration and are built into the internal structure of the ship. The tanks are insulated on the water side so that the tank structure will be at the same temperature as the adjacent ship structure, and are connected with suitable ballast loading and discharge facilities.

3,797,438

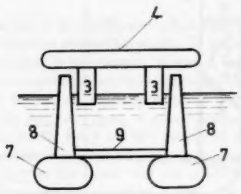
METHOD FOR THE CONSTRUCTION OF FLOATING UNITS OF GREAT DIMENSIONS

Jose Maria Marco Fayren, Vigo, Spain, assignor to Hijos De J. Barreras S.A., Vigo, Spain

Filed June 11, 1971, Ser. No. 152,057

Int. Cl. B63b *3/02*

U.S. Cl. 114—77 R **9 Claims**



Method for constructing large floating units, like drilling rigs, comprising forming upright support columns on floating units and floating the floating units to a mounting site; ballasting the floating units with the upright columns thereon to temporarily submerge the units until only the tops of the columns are exposed; forming a rig carrying platform supported on floatable parallelepipedic bodies and floating the platform and bodies to the columns until the platform is over the submerged columns; deballasting the columns and floating units to cause the columns to rise into engagement with the platform and joining the columns and platform.

3,797,439

METHOD OF OUTFITTING AN ENGINE ROOM OF A SHIP

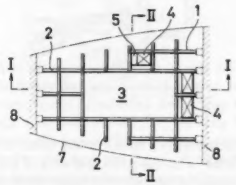
Shiro Maruyama, Yokohama; Ken Iwai, Chigasaki; Yasuo Yabuuchi, Yokohama, and Syoji Maki, Yamato, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 27, 1972, Ser. No. 275,878

Claims priority, application Japan, Aug. 10, 1971, 46-60560

Int. Cl. B63b *3/02*

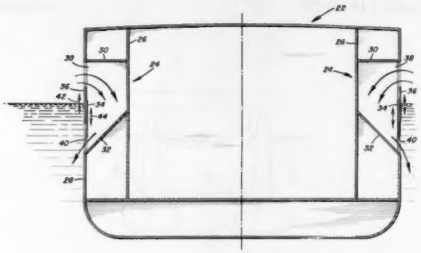
U.S. Cl. 114—77 R **5 Claims**



A method of outfitting an engine room of framework section in the course of shipbuilding which comprises the sequential steps of assembling an inner structure of the engine room as a framework section on the ground, installing necessary

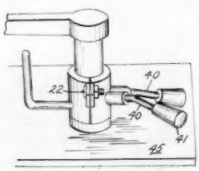
equipment for the engine room, other than the main engine and boilers, in the framework section, craning up the framework section incorporating the equipment onto a building berth, and joining the same to the adjoining hull section already erected on the berth.

3,797,440
OPEN HULL STABILIZER
Frans V. A. Pangalila, Peuleyen, Netherlands, assignor to Flume Stablizations Systems, Inc., Hoboken, N.J.
Filed Nov. 26, 1971, Ser. No. 202,257
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **10 Claims**



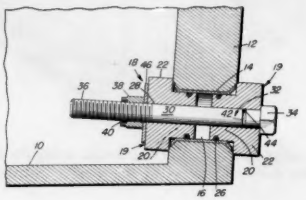
A passive stabilizer operated directly by the action of the external waters in which a vessel floats. The port and starboard sides of the hull of a double hull water-going vessel are opened to the external waters in two positions. The uppermost and larger of the openings serve as inlets for the water in which the vessel floats; and the lower and smaller of the openings serves as drainage ports for the expulsion of the water. Behind each of the sets of openings, and between the inner and outer hulls of the vessel, a water-housing chamber is defined. During the roll of the vessel, caused by wave action, either the port or the starboard chamber fills with water. In these harnessed positions, the water serves to develop a moment tending to stabilize the vessel against roll. Apparatus is provided for adjusting the size of the hull openings. With such a tank system, the operating efficiency is optimized without having to tune both the water inlet and the water outlet.

3,797,441
TILLER CONTROLS FOR SMALL BOATS
John Burnett, 95 Roseville Rd., Westport, Conn.
Filed Apr. 17, 1972, Ser. No. 244,389
Int. Cl. B63h *25/00*
U.S. Cl. 114—172 **2 Claims**



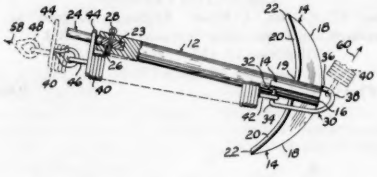
Devices for temporarily locking the tiller of small boats in fixed relation relative to the principal axis of the hull to enable the helmsman to leave the tiller for short-time intervals to trim a sail or perform other duties, during which interval the boat is maintained substantially on a predetermined course. Each of the disclosed embodiments includes means engaging a relatively fixed part of the hull, and second means selectively clamping either the rudder post or the tiller in any of a plurality of selected relative positions.

3,797,442
ACCIDENT PROOF, TAMPER PROOF BOAT DRAIN PLUG
Thomas Earle McRae, 18150 Oleta Dr., North Miami Beach, Fla.
Filed Apr. 27, 1973, Ser. No. 354,951
Int. Cl. B63b *13/00*
U.S. Cl. 114—197 **8 Claims**



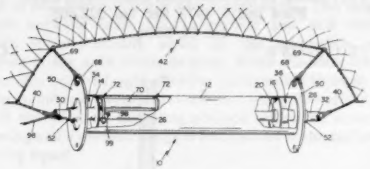
This device is a boat transom drain hole plug that is accident proof and tamper proof, at least against a single individual in that it takes the cooperation of at least two individuals to remove this plug. It comprises a pair of apertured, flanged adapters fitting in opposite sides of the boat transom drain hole and held in position by a threaded bolt therethrough and an elastic stop nut threaded thereon. The cylindrical portions of the adapters fit snugly within the drain hole, or within the metal sleeve lining the drain hole, if one is present. O-rings are set in and at least slightly extend from circumferential recesses in each cylindrical portion to seal against the drain hole wall or the metal sleeve lining the drain hole wall. To prevent any possible leakage through the adapter apertures, the bolt is also provided with a sealing O-ring extending slightly from a cylindrical recess in the bolt stem adjacent the bolt head, and a washer may be used between the elastic stop and the adjacent flange of the adjacent adapter. As thus set up, the drain plug cannot possibly loosen accidentally, and it can not be removed or vandalized by a single individual. It takes two individuals, one inside and one outside the boat to install or remove this boat drain hole plug.

3,797,443
BOAT ANCHOR
Nils S. Woolsey, and Wade Van Blair, both of Tulsa, Okla., assignors to Quadall Company, Inc., Tonkawa, Okla.
Filed Jan. 2, 1973, Ser. No. 320,017
Int. Cl. B63b *21/46*
U.S. Cl. 114—206 R **1 Claim**



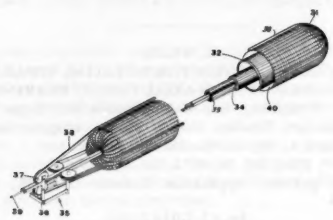
An anchor is provided with an elongated resilient element disposed substantially parallel with the longitudinal axis of the shank. One end of the resilient element is provided with a ring connected with an anchor line and separably connected with one end of the shank. The other end of the resilient element is loosely connected with the anchor crown in such a manner that when one end of the resilient element is separated from the anchor shank a lifting force is applied to the anchor crown for freeing an anchor wedged in a submerged obstruction.

3,797,444
TOWING GUIDE
Harry E. Stubbs, Four Bird Hill Rd., Lexington, Mass.
Filed Apr. 19, 1971, Ser. No. 135,052
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B 16 Claims



A towing guide having support structure within the periphery and extending longitudinally beyond the rotor, with a tow attachment means longitudinally outward from each end of the rotor and bearing means for the rotor between the attachment means thereby providing a single-beam towing guide free of braces spanning the rotor for direct application of towing forces to the opposite ends thereof. The towing guide has a stationary end baffle mounted on a rotor support and extending radially beyond the rotor to impede endwise flow therearound, the baffle and the rotor having closely spaced, generally parallel opposing surfaces providing an extended narrow gap to permit rotation of said rotor while impeding water flow therethru between the exterior and interior of the rotor.

3,797,445
TRANSPORTER FOR USE IN WATER
Harry Zeimer, Jerusalem, Israel, assignor to The State of Israel, Jerusalem, Israel
Continuation-in-part of Ser. No. 738,746, May 8, 1968, abandoned. This application Jan. 18, 1971, Ser. No. 107,396
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R 3 Claims

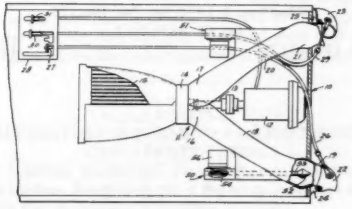


This invention relates to a submersible transport apparatus comprising a flexible hollow generally toroidal envelope having inner and outer surfaces, said inner surface being extrovertible toward said outer surface at the leading end of the apparatus and said outer surface being simultaneously introvertible toward said inner surface at the trailing end of the apparatus, and transport means for displacing said envelope axially through a fluid medium, said transport means including a plurality of guide elements with endless surfaces engageable and movable with the walls of said envelope for guiding said walls in the direction of travel of the envelope in said fluid medium and for imparting to the envelope a traction, which together with the frictional forces acting on the envelope as a result of movement through the fluid medium causes said envelope to develop a combined sliding and rolling motion with respect to the external fluid medium.

3,797,446
MOBILE POWER UNIT
Lyle G. P. Cox, and Ralph J. Cibula, both of General Delivery, Gladstone, Manitoba, Canada
Filed Dec. 19, 1972, Ser. No. 316,574
Int. Cl. A63c *11/10*
U.S. Cl. 115—6.1 20 Claims

A source of power drives the device on land or water. A pair of elongated handles extend forwardly of the device between which the operator is positioned. Water or snow skis, wheel skates or skis, a togobban platform and wheels and the like are worn or used by the operator depending upon the medium upon which the device is used. A travel surface activated assembly automatically shuts off the source of power and provides braking of the unit thus preventing the unit from running over the operator in the event that the operator falls. The actuator assembly operates either if the operator falls accidentally or, alternatively, if he lowers the handles so that the actuator engages the surface. The entire unit is designed to be easily folded or disassembled so that it can be carried in the trunk of a car or the like.

3,797,447
INBOARD PROPULSION SYSTEM FOR A BOAT
Robert A. Stubblefield, 755-5th Ave., Salt Lake City, Utah
Filed Aug. 3, 1972, Ser. No. 277,817
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R 12 Claims



An inboard propulsion system for a boat utilizing a water jet propulsion characterized by a pair of spaced nozzles each provided with individually controlled deflecting hoods to enable providing both a reverse thrust for backing the boat and to selectively reverse the water jet of a single nozzle to provide a turning force for steering the boat. Preferably, each of the nozzles is provided with a servo system which varies the effective opening of the nozzle in response to changes in the pressure differential between the intake pressure to the main impeller unit and the discharge pressure of the impeller unit to attempt to maintain a constant quantity flow from the nozzles independent or regardless of any variations in the intake pressure of the impeller unit.

3,797,448

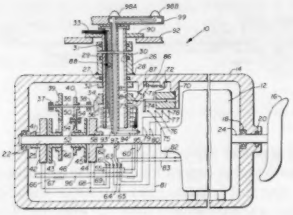
TROLLING MOTOR WITH STEERING MEANS

Howard A. Cramer, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 238,327, March 27, 1972, Pat. No. 3,723,839. This application Mar. 19, 1973, Ser. No. 342,411

Int. Cl. B63h *21/26*

U.S. Cl. 115—18 E **10 Claims**



This disclosure describes an improved electric trolling motor system for driving small boats. The motor which drives the propeller also drives a gear train through electrical clutches. Gears are provided to separately cooperate with a third gear means to rotate the trolling motor with respect to a fixed support tube fastened to the boat. By connecting one or the other clutch to a battery, the direction of the motor axis can be rotated to the right or to the left.

Included also is a solenoid operated brake which locks the drive means between the support tube and the motor so that when the clutches are not energized the motor is locked in direction with respect to the support tube. A second smaller tube is positioned axially in the longitudinal bore through the support tube. The lower end of the small tube is attached to the motor assembly, and the upper end carries a radial arm, by means of which the direction of the motor axis can be indicated.

3,797,449

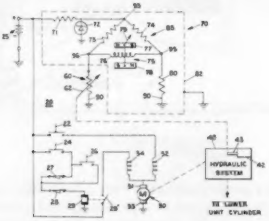
TRIM INDICATOR AND CIRCUIT THEREFOR

William R. Carpenter, and Richard M. Sponaas, both of Muskegon, Mich., assignors to Medallion Instruments, Inc., Spring Lake, Mich.

Filed Nov. 8, 1971, Ser. No. 196,325

Int. Cl. B63h *5/12*

U.S. Cl. 115—41 HT **4 Claims**



A trim or tilt angle-indicating system for providing a visual indication of the position angle of the outdrive unit in an inboard-outboard boat propulsion system including an electrical meter coupled in a bridge circuit supplied power by a regulated voltage supply. One leg of the bridge circuit comprises a variable resistor which has a wiper arm coupled to the outdrive unit. As the trim angle of the outdrive is varied, the resistance of the variable resistor changes, to thereby unbalance the bridge circuit. The resulting electrical current flow through the meter deflects a meter needle to indicate that the trim angle of the outdrive unit on a dial is associated with the meter.

3,797,450

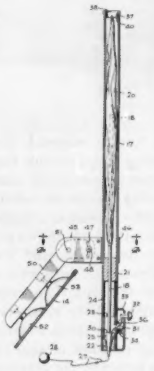
EMERGENCY SIGNAL FLAG

Lloyd E. Frisbee, 20055 Hiawatha, Chatsworth, Calif.

Filed Jan. 8, 1973, Ser. No. 322,005

Int. Cl. B60q

U.S. Cl. 116—28 R **3 Claims**



A signal flag apparatus is disclosed herein having an elongated tube storing a shaft with a flag secured along one end thereof. The tube houses resilient member forciably urging the shaft and flag out of the tube in a fully deployed condition. A push button device holds the shaft and flag in a storage position within the tube and upon actuation, permits the resilient member to project the shaft and flag out of the tube. A pull cord is attached to the end of the shaft which when pulled, causes the shaft and flag to be withdrawn into the tube for storage and reset purposes. A bracket pivotally mounts the tube on an appropriate portion of a vehicle such as a boat.

3,797,451

WEAR WARNING DEVICE FOR ROTATING APPARATUS PROVIDED WITH AN AXIAL THRUST BEARING

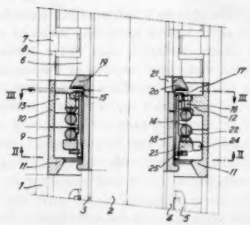
Wladimir Tiraspolsky, Issy-les-Moulineaux, and Roger Francois Rouviere, Venelles, both of France, assignors to Turboservice S.A., Issy-les-Moulineaux, France

Filed Oct. 16, 1972, Ser. No. 297,641

Claims priority, application France, Oct. 25, 1971, 71.38174

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 Q **9 Claims**



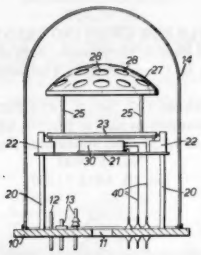
A wear warning device for rotating apparatus provided with an axial thrust bearing, more particularly for drilling turbines,

comprises a valve provided in the fluid circulation passages of the turbine, said valve being movable between an open position and a throttling position. A holding member is provided for normally retaining said valve in its open position. A helical spring is provided between said valve and a stationary member for urging said valve towards its throttling position. The holding member is rigid with the stator or rotor part of the turbine, while another member having an abrasive surface is connected to said rotor or stator part, respectively. The original distance between said abrasive surface and said holding member is substantially equal to the admissible wear clearance of the axial thrust bearing. When the wear limit is substantially reached, said abrasive surface cuts through said holding member in order to release said valve. Therefore, the valve is moved to its throttling position under the action of said spring and a pressure surge is transmitted to the surface as a warning signal.

3,797,452
MOTOR DRIVES FOR VACUUM DEPOSITION APPARATUS

Christopher David Dobson, 157 Linden Ct., Newbridge, Monmouthshire, England

Filed Feb. 24, 1972, Ser. No. 228,904
Claims priority, application Great Britain, Mar. 2, 1971, 5744/71; Jan. 17, 1971, 2146/71
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **9 Claims**



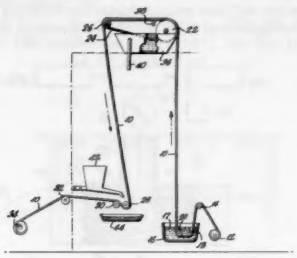
Vacuum deposition apparatus including a base (**10**), a vacuum vessel (**14**), a rotary workholder (**23, 25, 27**), auxiliary services (**12, 13**) passing through the base, and a linear induction motor (**30**) for driving the rotary workholder. The stator of the induction motor may be included in a sealed case (**43**) or it may be formed as a solid metal core (FIG. **6**) without a case. Additionally a tubular induction motor (**62, 63**) may be provided for feeding a metal wire (**61**) from a spool (**60**) within the vacuum vessel.

3,797,453
APPARATUS COATING SHEETED MATERIAL WITH A TACKY SUBSTANCE

Anthony R. Rizzo, Lynn, Mass., assignor to Afco Products Inc., Somerville, Mass.

Division of Ser. No. 66,104, Aug. 21, 1970, Pat. No. 3,681,121, Continuation of Ser. No. 580,656, Sept. 20, 1966, abandoned. This application Mar. 15, 1972, Ser. No. 234,776
Int. Cl. B05c *11/12*
U.S. Cl. 118—69 **5 Claims**

An apparatus for treating a continuous web of material which has been coated with a tacky substance having means for moving the web along a first path having an upward vertical component to permit the substance to dry at least partially and to lose at least a portion of its tackiness. Means are provided for changing the direction of travel of the web to a second path having a downward vertical component and includes an absorbent surface positioned to contact the web and

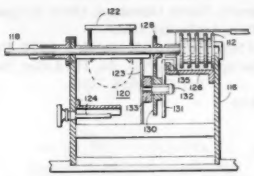


change the direction of travel. The absorbent surface is capable of absorbing a fluid which prevents the adherence of the partially set tacky substance to the absorbent surface.

3,797,454
ADHESIVE APPLICATOR

Peter Kalikow, 870 United Nations Plaza, New York, N.Y.

Division of Ser. No. 178,764, Sept. 8, 1971, Pat. No. 3,747,480. This application Dec. 20, 1972, Ser. No. 316,830
Int. Cl. B05c *1/02*
U.S. Cl. 118—247 **3 Claims**



Cam-activated pressure wheels press desired portions only of the blank against continuously revolving adhesive-applicator wheels as the conveyor moves the blanks thereover. Means driving the applicator additionally rotates a vertically disposed disc which is partially immersed in an adhesive supply and whose upper portions lie closely adjacent to the applicator container whereby the adhesive is carried from said supply and scraped off the disc to be deposited in the container.

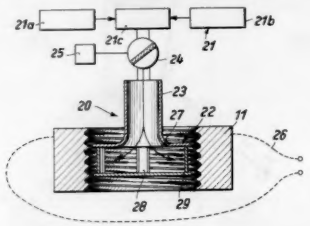
3,797,455
APPARATUS FOR FORMING A SELF-LOCKING THREADED COUPLING

Harry Scheffer, Brackwede; Dieter Schuster, Bielefeld, and Paul Linders, Brackwede, all of Germany, assignors to Bollhoff & Co., Brackwede/Westphalia, Germany

Division of Ser. No. 73,091, Sept. 17, 1970. This application Mar. 31, 1972, Ser. No. 240,192
Claims priority, application Germany, Sept. 30, 1969, 19492274
Int. Cl. B05b *7/24*
U.S. Cl. 118—308 **12 Claims**

The invention pertains to apparatus for forming a self-locking threaded coupling wherein the threads of the coupling are covered with a layer of thermoplastic synthetic material and the thickness of the layer varies about the circumference of the threaded surfaces to avoid shearing of the synthetic material when the components constituting the threaded coupling are threaded together. The apparatus of the invention constitutes means for applying the synthetic thermoplastic material to the threaded component by employing a gaseous carrier such as air wherein the synthetic material is

blown upon the threaded component having the synthetic material affixed thereto. As only preselected portions of the threaded surfaces are to be covered by the synthetic material, the apparatus includes spaced shields for shielding parts of the threaded components from the blown synthetic material, and



the apparatus of the invention may be used to coat either interiorly or exteriorly threaded surfaces. The apparatus includes supply and mixing chambers and timed valve control means regulating the duration that the blown synthetic material is placed upon the threaded components.

3,797,456

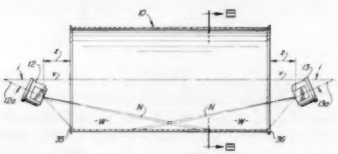
APPARATUS FOR COATING THE INTERIORS OF HOLLOW BODIES

Edwin F. Hogstrom, North Olmstead, Ohio, assignor to Nordson Corporation, Amherest, Ohio

Division of Ser. No. 16,733, March 5, 1970, Pat. No. 3,640,758. This application Nov. 26, 1971, Ser. No. 202,465

Int. Cl. B05b *7/08*

U.S. Cl. 118—316 **10 Claims**



Apparatus for coating the interior cylindrical surface of objects such as metal cans for food, beverages and other substances which need protection against injurious reaction with or pollution from contact with the material of the can. Airless spray coating of such surfaces revolving at high speed by stationary spray nozzles external of the can. The nozzles project impinging airless sprays having desirable patterns through respective ends of open ended can cylinders into longitudinally elongated contact with the interior surface.

3,797,457

COATING OF SURFACES WITH POWDER

Roger Brian Bushnell, 49 Parkland Grove, Ashford, England

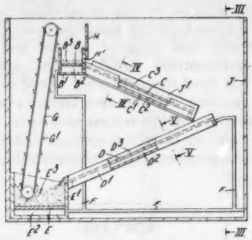
Filed Mar. 8, 1971, Ser. No. 121,945

Claims priority, application Great Britain, Mar. 16, 1970, 10950/70

Int. Cl. B05b *5/00*

U.S. Cl. 118—630 **7 Claims**

This invention relates to the surface-coating of a metal or other article or articles with powder and comprising an inclined sheet made of material porous to air or other gas and down which the powder is caused to flow, air or other gas being blown through such sheet to cause turbulence above the sheet to assist the downward flow of the powder, the powder particles being electrostatically charged so that they will be attracted from the space above the inclined sheet by the article or articles to be coated when such articles are moved past the turbulent space above the inclined sheet, the length and position of the inclined sheet being such that every part of the surface or surfaces to be coated passes closely adjacent to the space over the inclined sheet. Any powder which is not attracted away from the space over the inclined sheet and escapes from the bottom of such sheet is caused to pass into a main powder reservoir from which the powder is conveyed to the top of the inclined sheet to flow down such sheet.



3,797,458

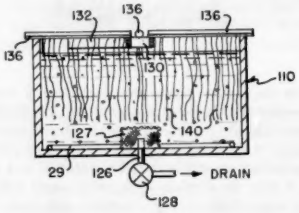
APPARATUS FOR GROWING CRUSTACEANS

John J. Day, and Paul S. Hirschman, both of Ft. Lauderdale, Fla., assignors to Ocean Protein Corporation, New York, N.Y.

Division of Ser. No. 96,137, Dec. 8, 1970, Pat. No. 3,724,423, which is a continuation-in-part of Ser. No. 889,819, Dec. 24, 1969, Pat. No. 3,658,034. This application Sept. 11, 1972, Ser. No. 287,903

Int. Cl. A01k *61/00*

U.S. Cl. 119—2 **13 Claims**



Apparatus and method for providing optimum conditions for the growth and maturation of crustaceans during the post-larval period, which includes at least one tank having strand type habitats therein for the crustacea. A series of interconnected tanks is provided, with a tank subsequent to the one having the strand habitats including compartments for the crustacea.

3,797,459

ELECTRIC FISH TANK

Daniel J. Harris, 54 Blue Ridge Ln., West Hartford, Conn.

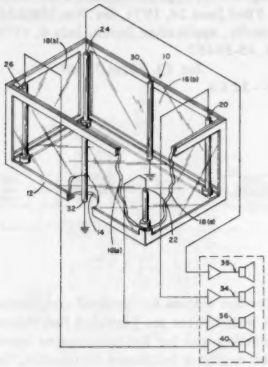
Filed May 25, 1972, Ser. No. 256,985

Int. Cl. A01k *63/00*

U.S. Cl. 119—5 **9 Claims**

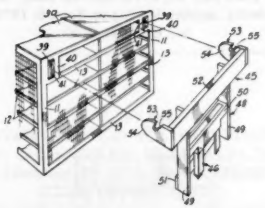
A fish tank is presented for observation of electrically active fish by the detection of electric or electromagnetic emanations from the fish and conversion to an audio output. A con-

figuration of grounded electrodes effectively divides the tank into a plurality of zones, and other electrodes positioned in the zones, are connected to high gain audio amplifiers whereby



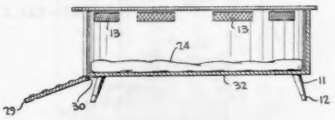
electrical emissions of the fish are converted to audio output. The intensity of the detected emanations indicates the relative proximity of the electrically active fish to the other electrodes within their respective zones.

3,797,460
POULTRY HANDLING SYSTEM
Milton O. Blankenship, Canton, Ga.
Division of Ser. No. 107,771, Jan. 19, 1971, Pat. No. 3,741,417. This application June 6, 1972, Ser. No. 260,310
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 **1 Claim**



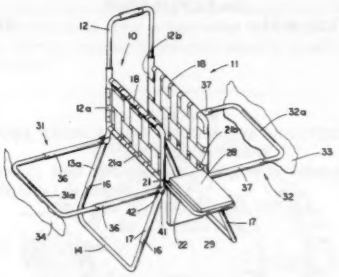
A receiving station having an upwardly open operable conveyor surface for conveying poultry to be processed from one location along a predetermined path to a second location is provided with an adjustable support platform means movable between operable and inoperable positions for effecting a transfer of poultry by gravity from a container means onto the conveyor surface in response to the platform being moved to the operable position. Padded guide means is provided on an opposite lateral side edge of the conveyor means from the adjustable platform means for absorbing the impact of poultry deposited thereon and for effecting a guided movement of the deposited poultry onto the conveyor means. The conveyor means is operable for effecting a transfer of the poultry deposited thereon from a first location adjacent the operable platform to a second location adjacent suspension means used for conveying poultry through a processing operation. Special container means is provided for transporting poultry from poultry growing facilities to the receiving station. The container means is detailed to be supported on the platform means and for movement to the angular oriented operable position for effecting a transfer of poultry by gravity from within the container means onto the conveyor and padded guide means.

3,797,461
PET HOUSE
Earl W. Breeden, Waynesboro, Va., assignor to Marie J. Garnett, Harrisonburg, Va.
Division of Ser. No. 17,224, March 6, 1970, Pat. No. 3,618,568. This application Nov. 1, 1971, Ser. No. 194,112
Int. Cl. A01k *01/00*
U.S. Cl. 119—19 **1 Claim**



Pet house in the form of an attractive piece of furniture which can be readily opened to a pet house usable in a person's living quarters.

3,797,462
DOG STANCHION FOR AUTOMOBILES
Gary A. Davis, 6353 Monitor Ln., Indianapolis, Ind.
Filed May 29, 1973, Ser. No. 364,973
Int. Cl. B60r *7/04*
U.S. Cl. 119—96 **3 Claims**

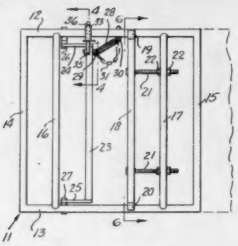


Disclosed is stanchion for stabilizing medium or large size dogs riding in a passenger automobile. The stanchion has spaced side panels spanned by a transverse member at the panels' front end. The panels have support legs of adjustable length which diverge outwardly, and extending sidewardly and outwardly from each panel is a telescoping U-shaped bracing member which is spring loaded to a maximum extended position. The bracing members engage the sidewalls of the automobile in which the stanchion is installed.

3,797,463
LIVESTOCK TRAP AND SORTER
David N. McCrery, Jr., 1302 E. Broadway, Monmouth, Ill.
Filed Jan. 19, 1973, Ser. No. 324,985
Int. Cl. A01k *29/00*
U.S. Cl. 119—155 **8 Claims**

An animal trapping and sorting gate assembly consisting of a rectangular frame having vertical spaced rails, one inner vertical rail being horizontally adjustable and the adjacent inner vertical rail being mounted on top and bottom horizontal arms pivoted on a common vertical axis to the top and bottom horizontal elements of the frame. The pivoted vertical rail is biased toward a centered position coplanar with the frame, by a spring. A pin may be inserted through the top horizontal ele-

ment of the frame to limit swinging movement of the pivoted vertical rail to only one direction from its centered position so



that the gate assembly may be employed with an enclosure to allow animals to enter the enclosure but to allow only animals under a predetermined size to leave the enclosure.

3,797,464

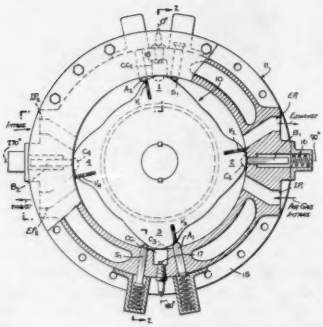
BALANCED ROTARY COMBUSTION ENGINE

Harold G. Abbey, 75 Prospect St., East Orange, N.J.

Filed Dec. 6, 1971, Ser. No. 205,197

Int. Cl. F02b *53/08*

U.S. Cl. 123—8.33 **8 Claims**



A rotary internal combustion engine of symmetrically balanced construction. The engine includes a stator having a circular chamber provided with a pair of diametrically-opposed combustion cavities having igniters therein. Concentrically mounted within the stator is a rotor having at least one pair of lobes. The stator chamber is effectively divided into two distinct sections by means of gas-separating vanes which are disposed at diametrically-opposed positions along an axis at right angles to the common axis of the combustion cavities, the gas-separating vanes continuously engaging the surface of the rotor. Associated with each vane is an exhaust port through which spent gases are forced out by a lobe advancing toward the vane, and an air-gas intake port through which a fuel mixture is admitted for compression by a lobe moving away from the vane.

3,797,465

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

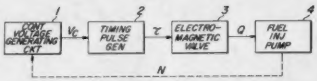
Nobuhito Hobo, Inuyama, and Norio Omori, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed June 24, 1971, Ser. No. 156,439

Claims priority, application Japan, July 4, 1970, 45-58456; July 4, 1970, 45-58457

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **5 Claims**



A fuel injection system for internal combustion engines is disclosed, in which there are provided fuel injection patterns for engine starting and for full-load engine operations. Cold starting of the engine is facilitated by injecting fuel according to the fuel injection control pattern required by the engine at the time of starting, and once after the engine has been started or when engine has been warmed up the fuel injection is made according to the fuel control pattern required for full-load operation, so that no black smoke generates even if the engine is rotated at a low speed with the full-load, thereby ensuring optimum fuel supply over the entire engine speed and engine load ranges without sacrificing the engine output for full-load operation of the engine.

3,797,466

FUEL INJECTION INTERNAL COMBUSTION ENGINE

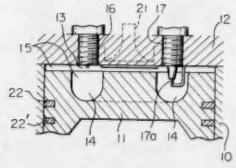
Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Tokyo, Japan

Filed July 21, 1971, Ser. No. 164,770

Claims priority, application Japan, Sept. 8, 1970, 45-78656

Int. Cl. F02b *9/10*

U.S. Cl. 123—32 ST **3 Claims**



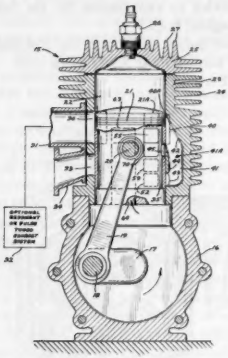
To make available a fuel internal combustion engine which can be driven with a relatively lean combustible mixture to reduce concentrations of toxic hydrocarbons, carbon-monoxides and nitrogen oxides in engine exhaust gases without impairing combustion efficiency of the engine, the engine is provided with an improved combustion chamber which consists of a usual space usually used as the combustion chamber and an additional space formed in an end wall of a piston. A fuel injection valve and a spark plug spaced from the valve are located in alignment with this additional space so that a major portion of the supplied fuel is distributed to the additional space so as to produce therein a relatively rich combustible mixture which can be readily ignited by the spark plug whereby a relatively lean mixture produced in the usual space of the combustion chamber is ignited by the aid of the flames resulting from the combustion of the rich mixture.

3,797,467

TWO CYCLE ENGINE SCAVENGE PORTS

William L. Tenney, Crystal Bay, Minn.

Filed Feb. 9, 1972, Ser. No. 224,756
Int. Cl. F02b 33/00
U.S. Cl. 123—73 AA 15 Claims



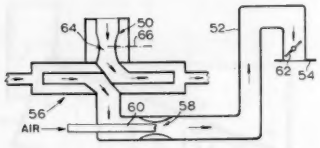
In a two cycle engine of the type which utilizes the underside of the power piston as a scavenging pump piston and which has the scavenge ports located in the lower end of the cylinder, the provision of a scavenge port or ports of extra height but having normal effective port timing as to opening to the scavenge pump system, additional timing control being effected by means of a port or ports located in the piston side wall.

3,797,468

FUEL SYSTEM OF INTERNAL COMBUSTION ENGINES

David Fisher, 22 Beechurst Rd., Liverpool L25, 3QA, England

Filed Aug. 29, 1972, Ser. No. 284,485
Int. Cl. F02m 31/10
U.S. Cl. 123—133 4 Claims



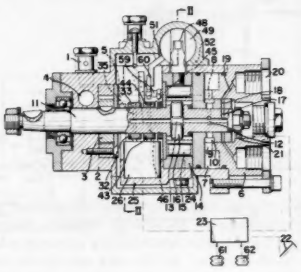
A heat exchanger is incorporated between the carburetor and inlet manifold of an internal combustion engine to enhance fuel vaporization and therefore reduce fuel consumption and harmful exhaust emissions. The heat exchanger is preferably connected into the cooling system of the engine. In a development, an auxiliary air bleed is provided upstream of the heat exchanger to convert vapourized fuel into a fog to further enhance efficient combustion.

3,797,469

DISTRIBUTOR-TYPE FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Masayoshi Kobayashi, Kawagoe; Yoshio Ohtani, and Mitsunobu Abe, both of Higashi-Matsuyama, all of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1972, Ser. No. 240,506
Claims priority, application Japan, Apr. 30, 1971, 46-28061; Apr. 6, 1971, 46-20690
Int. Cl. F02m 51/00
U.S. Cl. 123—139 E 8 Claims



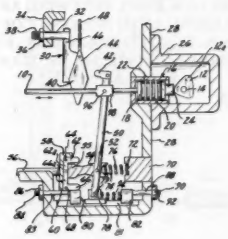
A distributor-type fuel injection pump for internal combustion engines, comprising at least one electrical actuator so moving together with the internal cam ring and so controlled from a control circuit operating with input signals derived from the rotating speed and accelerator position that the movement of said electrical actuator is imparted to the sleeve located around the rotor to determine the effective injection stroke, thereby making the injection quantity capable of being freely varied.

3,797,470

FUEL REGULATING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Norman G. Beck, Wheaton, Ill., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 10, 1972, Ser. No. 225,216
Int. Cl. F02d 1/04
U.S. Cl. 123—140 R 3 Claims



A fuel regulating system including provision for automatically adjusting the fuel supply as a function of increasing or decreasing engine speed. A movable sleeve member actuable by the action of a centrifugal type governor actuates a control lever which in turn regulates the quantity of fuel delivered to the engine. The control lever is further attached to a manual throttle of the cam type with an intermediate spring plunger to provide for operator adjustment of the fuel. Additionally, there is provided a pair of adjustable stops engageable with the lower end of the control lever to provide respectively low idle speed and high idle speed limits.

3,797,471

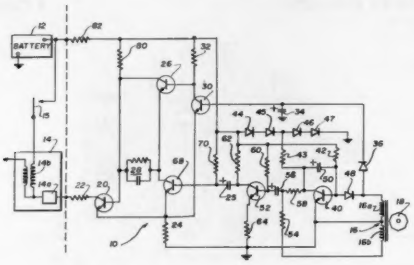
BREAKERLESS TRIGGER CIRCUIT WITH VARIABLE DWELL FOR IGNITION SYSTEMS

Gunter Schuette, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 44,140, June 8, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 244,028

Int. Cl. F02p *3/02*

U.S. Cl. 123—148 E **2 Claims**



A triggering circuit for an ignition system to develop electric signals which correspond to the closing and opening of breaker points. A transistor which controls the current flow through the primary winding of a standard ignition coil is in a quiescent off condition when the engine is not being cranked or turning. Only upon cranking of the engine will the transistor be rendered conductive for a period of time, corresponding to the dwell angle of the system, to apply given-width pulses to the primary winding of the ignition coil. The termination of the pulses produces spark voltage at the secondary winding of the ignition coil. Means are provided to automatically increase the dwell angle of the system at a predetermined engine speed.

ERRATUM

For Class 123—142.50 E see:
Patent No. 3,798,072

3,797,472

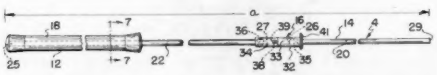
SHUTTLECOCK AND LAUNCHING APPARATUS INCLUDING LENGTHENING COUPLER

George L. Krisely, Jr., 43151 Dellefield Rd., Elyria, Ohio

Filed Feb. 7, 1972, Ser. No. 223,934

Int. Cl. A63b *71/02*

U.S. Cl. 124—5 **7 Claims**



A game apparatus including a launching member adapted to be operated by a player and a projectile member separably mounted on the launching member for launching by the player from one position adjacent the player to another position remote therefrom. The launching member comprises an elongated, resilient pole and a projectile member is of a shuttlecock-like construction being mounted for sliding movement along the length of the pole for launching from one end thereof toward the remote location. A target assembly is mounted remotely from the player being arranged for scoring registration with the projectile member. The target assembly includes a base having a target member detachably mounted thereon which is adapted to be detached from the base when struck by the projectile member after launching by the player.

3,797,473

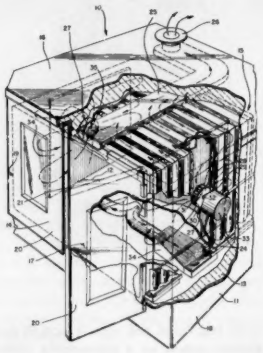
FORCED CONVECTION OVEN

Paul A. Mutchler, University City, Mo., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 5, 1973, Ser. No. 376,660

Int. Cl. F24c *5/16*; **A21b** *1/26*

U.S. Cl. 126—21 A **6 Claims**



A forced convection oven utilizing two blower rotors mounted on opposed walls of the oven cavity adapted to rapidly and efficiently cook food items. The use of two rotors reduces the space requirements within and without the oven for the forced convection components, reduces the velocity of air required to be circulated within the oven cavity and reduces the air circulation path within the cabinet. The blower rotors are powered by air motors which are not adversely affected by high ambient temperature conditions encountered adjacent the oven.

3,797,474

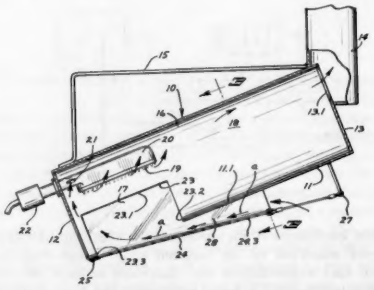
FUEL FIRED SPACE HEATER

John E. Eichenlaub, 9321 Franklin Ave., West, Minneapolis, Minn.

Filed May 18, 1973, Ser. No. 361,519

Int. Cl. F24c *3/04*

U.S. Cl. 126—85 R **14 Claims**



A fuel fired space heater directing infrared in a downward direction from a radiant confined within a combustion

chamber at the lower end of an elongate inclined housing, an enlarged combustion gases discharging chamber above said combustion chamber and delivering the combustion gases to an outlet, the housing having a radiant heat discharging port beneath said combustion chamber, and a flexible panel of a material highly transmissive of infrared and also being inclined with the lower edge of the inclined panel secured to the housing adjacent the radiant heat discharging port and the upper side portion of the panel being spaced from the housing or supplied by an air intake passageway, but confronting the entire port to enclose the port and deliver combustion air downwardly along the inner face of the panel for preventing deposit of dust and delivering cool combustion air for cooling the panel and supplying air to the fuel fired radiant.

Space heaters for extremely dusty spaces such as turkey houses where a substantial amount of litter is on the floor usually require an extreme amount of maintenance so as to remain functional, primarily because of the dust that must be contended with in such installations. In turkey brooders, a substantial amount of the dust is airborne of which 20 percent by weight is in continuous suspension and 80 percent is sedimentary so as to settle on everything that has a somewhat horizontal surface.

Insurance and other applicable codes vary from place to place and the nature of the fuel fired heating installation will be controlled accordingly. It has been a problem to accommodate the installation codes of heaters as well as to accommodate the dust problem which is always present and which is of primary importance in the design or selection of a heater for a particular installation.

3,797,475

PORTABLE CORDLESS HAIRDRYER

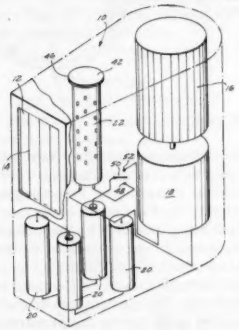
Thomas Bartley Hughes, Newcastle upon Tyne, England, assignor to Ronson Corporation, Woodbridge, N.J.

Filed Sept. 12, 1972, Ser. No. 288,440

Claims priority, application Great Britain, Sept. 29, 1971, 45439/71

Int. Cl. A61f 7/00

U.S. Cl. 126—206 **3 Claims**



A portable cordless hairdryer comprising a heater unit to produce an exothermic reaction at a controlled rate and battery operated blower means to direct air heated by the heater unit onto hair to be dried.

3,797,476

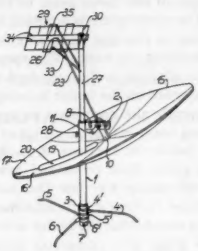
SOLAR HEATING DEVICE

Adnan Tarcici, 13, Avenue de Bude, 1202 Geneva, Switzerland

Filed Mar. 19, 1973, Ser. No. 342,365

Int. Cl. F24j 3/02

U.S. Cl. 126—270 **9 Claims**



A solar heating device comprising an upright tubular post, a rigid support member protruding perpendicularly from the post, and a generally paraboloidal reflector having a rigid arm extending along the axis of the reflector from the center thereof towards the focal point. A pivot perpendicular to a free end of said arm is selectively pivotally mounted and secured in one of a plurality of notches in said support member to provide a compensation for the lateral displacement of the focal point as the reflector is tilted. A height adjustable grid mounted on a tube slidably received within the post enables the support of an object to be heated. A rod indicating the focal point of the reflector can be disposed along the axis thereof.

3,797,477

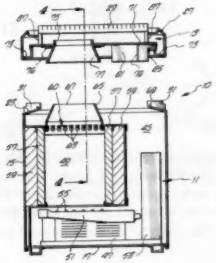
CONVERTIBLE GAS HEATING APPARATUS

Robert M. Ramey, North Hollywood, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 10, 1972, Ser. No. 216,586

Int. Cl. F22b 37/36

U.S. Cl. 126—307 A **24 Claims**



A convertible heating appliance is disclosed in which a common boiler unit is adapted to universally receive either a grate vent assembly or a stack assembly. As a result, the boiler unit can be packaged individually and stored for subsequent utilization with either assembly. The boiler comprises a cubical housing formed from four rectangular sidewalls. The interior of the boiler includes a combustion chamber having a heat exchanger and a flue collector mounted thereon. The flue collector comprises a shortened truncated hood which is adapted to sealingly register with a mating hood extension formed on the grate vent assembly or the stack assembly. A

plurality of vanes are peripherally spaced about the top periphery of the four sidewalls. Beside operating as air spoilers for the heater inlet, the vanes function as the primary means of supporting the grate vent or stack assembly.

The grate vent assembly comprises an apertured cover plate having the mating hood extension attached to the bottom side thereof directly below the aperture. Baffle plates are attached to the outer edges of the cover plate to form a rectangularly shaped baffle. The cover plate is adapted to be mounted over the boiler housing so that the hood extension mates with the truncated flue hood of the boiler. The rectangularly arranged baffle plates are adapted to be attached to the peripherally spaced vanes mounted on the boiler housing.

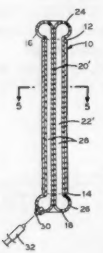
The stack assembly also comprises an apertured cover plate having the mating hood extension attached to the bottom side thereof directly below the aperture. A stack is mounted on the top side of the cover plate to extend over the aperture for providing a draft pasageway for the combustion exhaust. Either a draft hood or vent cap is attached to the top of the stack, depending on whether the boiler is to be used indoors or out. The cover plate also comprises peripheral side edges which are adapted to be attached to the peripherally spaced vanes mounted on the boiler housing.

3,797,478

MULTI-FUNCTIONAL VALVE FOR USE IN THE URETHRA

Michael Adrian Walsh, 81 Witherbee Ave., Pelham Manor, N.Y., and Edward F. Costigan, 348 Central Ave., Scarsdale, N.Y.

Filed July 11, 1972, Ser. No. 270,866
Int. Cl. A61b *19/00;* **A61m** *25/00*
U.S. Cl. 128—1 R **6 Claims**



A valve adapted to be positioned in the channel of the urethra for the maintenance of such channel at a predetermined size in a substantially sterilized condition relative to bacteria, such valve controlling the flow of urine from the bladder through the channel of the urethra to the atmosphere.

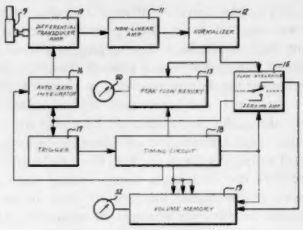
3,797,479

SPIROMETER

Martin H. Graham, Berkeley, Calif., assignor to Comprehensive Health Testing Laboratories, Inc., San Francisco, Calif.

Filed Apr. 14, 1972, Ser. No. 244,202
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **4 Claims**

A spirometer including improved pneumotach and electronic circuitry for obtaining normalized linear output measuring forced vital capacity and maximum expiration flow rate with automatic zeroing feature before test. Display means are included to provide the patient with an immediate indication



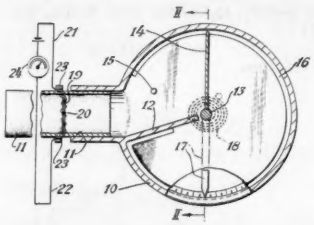
during a test of the patient's rating compared to normal. Automatic zeroing circuitry and a starting circuit responsive to initial exhalation are also included.

3,797,480

APPARATUS FOR INDICATING THE RATE OF FLUID FLOW

Garnet Montague Eveleigh Williams, London, England, assignor to Ferraris Development & Engineering Company Limited, London, England

Filed May 28, 1971, Ser. No. 148,077
Claims priority, application Great Britain, May 29, 1970, 26140/70
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **8 Claims**



Apparatus for indicating fluid flow rate which includes a thermistor carried by a mesh and arranged for connection in an electrical circuit including an indicating instrument, the time dependent pattern of variations in the rate of flow of fluid through the mesh being indicated by the indicating instrument because the resistance of the thermistor varies with the fluid flow rate. The thermistor can be calibrated by a comparison of its output signals with the pressure differential across the mesh for one fluid flow rate. The element may be connected into the electrical circuit by leads having the properties of a hot wire anemometer element, the leads being disposed on opposite sides of the mesh and arranged to indicate the direction of fluid flow through the mesh. A peak flow meter having mechanical means for measuring the peak rate of flow of air blown by a human subject, has a thermistor carried by its gauze mesh filter and arranged to give an indication of the time dependent pattern of variations in the rate of flow of air blown by the subject.

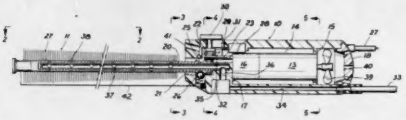
3,797,481
HYGIENIC CLEANING DEVICE FOR THE ANAL AREA OF THE HUMAN BODY

Barbara Jean Doran, 7319 Brompton, B 216, Houston, Tex.

Continuation-in-part of Ser. No. 99,503, Dec. 18, 1970. This application Nov. 22, 1971, Ser. No. 200,960

Int. Cl. A61h *9/00, 19/00, 21/00, 35/00, 37/00;* **A47k** *7/04, 7/08*

U.S. Cl. 128—65 **7 Claims**



A hand-held device for hygienical cleaning of the anal area of the human body including elongated cleaning heads mounted on a housing in a side-by-side relation, and a motor carried by the housing to drive the elongated heads in opposite directions about their longitudinal axes.

3,797,482
AUTOMATIC DEVICE FOR SUBAQUEOUS MASSAGE

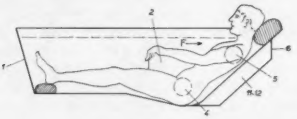
Michel Nicollet, 6, rue (Bas-Rhin), Strasbourg, France

Filed Mar. 23, 1972, Ser. No. 237,341

Claims priority, application France, Mar. 26, 1971, 71.11629

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **10 Claims**



An automatic device for subaqueous massage, comprising a bath or a basin, massaging elements which emit jets or currents of water and are placed or fixed detachably or rigidly on the walls and/or the bottom of the bath or basin, and an assembly formed by means for supplying the bath with water.

The apparatus can be used equally for the treatment of invalids or of persons in perfect health.

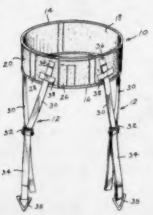
3,797,483
PELVIC TRACTION BELT

Inez Feldman, Etna Green, Ind., assignor to Orthopedic Equipment Company, Inc., Bourbon, Ind.

Filed June 14, 1972, Ser. No. 262,535

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **5 Claims**



A pelvic traction belt which includes a waist encircling member having one or more tensioning straps releasably connected thereto. Each strap includes hook-defining connectors carried at one end portion of the strap. The hook-defining connectors are engageable upon contact with the outer surface of the waist encircling member and are constructed so as to resist separation from the waist encircling member when the strap is placed under a tensioning load with the waist encircling member being worn by a patient.

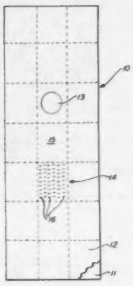
3,797,484
CYSTOSCOPY SHEET

Richard E. Ericson, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed June 7, 1972, Ser. No. 260,680

Int. Cl. A61f *13/00*

U.S. Cl. 128—132 D **5 Claims**



A cystoscopy sheet having a slitted area spaced from the fenestration in a position to permit drainage of liquid through the slits while solids are deposited on the surface of the sheet for removal and examination.

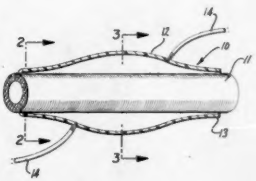
3,797,485
NOVEL DRUG DELIVERY DEVICE FOR ADMINISTERING DRUG INTO BLOOD CIRCULATION IN BLOOD VESSEL

John Urquhart, Malibu, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Mar. 26, 1971, Ser. No. 128,303

Int. Cl. A61m *5/00*

U.S. Cl. 128—213 **13 Claims**



A novel drug delivery device for administering a drug into the blood circulation comprising a means for positioning a drug supply on the adventitial surface of an intact blood vessel for diffusing the drug into the blood in the blood vessel.

3,797,486
INTRAVENOUS INFUSION ASSEMBLY

Robert S. Shaps, 1652 Taylor St., San Francisco, Calif.

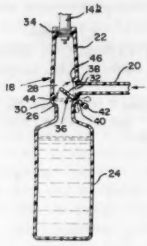
Filed Jan. 2, 1973, Ser. No. 320,183

Int. Cl. A61m *5/00, 1/00*

U.S. Cl. 128—214 R **4 Claims**

An improvement for intravenous surgical needle assembly that is implanted in the patient for a relatively long period of

time for intermittent intravenous injections. The improved assembly includes a chamber or reservoir holding a supply of a second fluid to be introduced through the intravenous needle, usually an anti-coagulant, and a valve to selectively close off the second fluid's circulation therethrough while allowing the



principal fluid to flow intravenously; and alternatively close off the principal fluid flow while allowing the second fluid to circulate from the reservoir in and through the surgical needle, usually for the purpose of preventing coagulation in and about the tip of the needle.

3,797,487

HYPODERMIC SYRINGE WITH CLUTCH FOR ASPIRATION

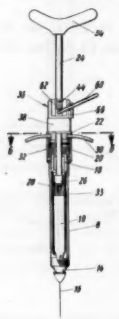
Gunther Schmidt, Eschwege, Germany, assignor to M. Woelm, Eschwege, Germany

Filed Oct. 27, 1971, Ser. No. 192,990

Claims priority, application Germany, Oct. 29, 1970, 2053096; Apr. 22, 1971, 2119508

Int. Cl. A61n *5/22*

U.S. Cl. 128—218 R **16 Claims**



A hypodermic syringe by which aspiration as well as injection can be effected, for example for the purpose of testing to see if the cannula has been inserted into a correct tissue of the patient. The syringe includes an operating lever for engaging a clutch acting between the piston rod or plunger of the syringe and a slide mounted co-axially on the piston rod and slidable thereon in a housing formed by part of the body of the syringe. The clutch can be released or engaged by the user while he is gripping the piston rod with the same hand, and thereby he can readily control the aspiration volume.

3,797,488

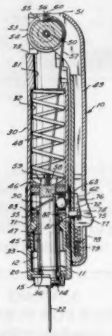
AMPOULE APPLICATOR WITH ONE-WAY CLUTCH

Alfred A. Hurschman, Hudson, and Leslie R. Udell, Cuyahoga Falls, both of Ohio, assignors to Ampoules, Inc., Macedonia, Ohio, by said Alfred A. Hurschman

Filed July 10, 1972, Ser. No. 270,145

Int. Cl. A61m *5/22*

U.S. Cl. 128—218 F **19 Claims**



An ampoule applicator comprising a hollow, cylindrical body having a chamber at one end for mounting a medicament-containing hypodermic ampoule having a depressible portion for injecting a volume of medicament into a patient. The applicator also includes a spring-biased force-applying member for actuating the ampoule. The force-applying member may be retracted against the bias of the spring by a cocking lever which rotates a pulley at one end of the applicator. A flexible cable is fixed at one end to the force-applying member and is fixed at its other end to the pulley so that, as the pulley is rotated, the cable is wrapped about the pulley and the force-applying member is retracted. A one-way check mechanism is provided between the force-applying member and the applicator body to permit retraction of the force-applying member but to prevent movement toward the ampoule during retraction. The one-way check mechanism includes a slot in the applicator body having tapered sidewalls which converge toward the ampoule-mounting end of the applicator and a ball which is positioned between the force-applying member and the body. The ball is spring-biased into light frictional contact with the force-applying member and the converging sidewalls of the slot, and is operable to roll along the slot toward the ampoule-mounting end of the applicator by forward movement of the force-applying member and into tight frictional contact with the force-applying member to prevent movement of that member toward the ampoule. The force-applying member is released by inserting a pin in the slot to move the ball away from the ampoule-mounting end of the applicator.

3,797,489

HYPODERMIC INJECTION DEVICE WITH SHOCK ABSORBING SPRING

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

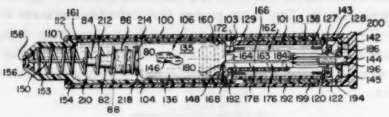
Filed Feb. 10, 1972, Ser. No. 225,123

Int. Cl. A61m *5/20, 5/24*

U.S. Cl. 128—218 F **6 Claims**

A hypodermic injection device is provided comprising a cylindrical holder closed at one end and slidably carrying an ampoule with attached cannula facing the closed end of the holder, medicament is provided in the ampoule between the cannula and the piston in the ampoule, a gun spring assembly

is associated with the holder and in operative association with the ampoule to force the ampoule and attached cannula forward thus driving the cannula out of the closed end of the



holder and into the locus of injection, and a counterbalancing spring is positioned in the holder between the closed end thereof and the cannula end of the ampoule to counteract the gun spring force.

3,797,490

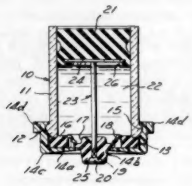
HYPODERMIC AMPOULE WITH SKIN TENSIONING CLIP

Alfred A. Hurschman, and Thomas P. Schiller, both of Streetsboro, Ohio, assignors to Ampoules, Inc., Macedonia, Ohio

Division of Ser. No. 114,493, Feb. 11, 1971, Pat. No. 3,735,761. This application Aug. 24, 1972, Ser. No. 283,581

Int. Cl. A61m *5/28*

U.S. Cl. 128—218 M **14 Claims**



Hypodermic ampoules of the contained-needle type, and combinations of such ampoules with so-called "applicators" for actuating the ampoules to make injections are disclosed. Each of several ampoule forms has at least one cylindrical, medicament-containing chamber and a plunger closing one end thereof. A hollow needle is fixed to the plunger and is initially contained within such a chamber. The other end of the ampoule is sealed by a diaphragm which is pressed against a beaded end portion of a cylinder and is sealed thereto by a cup-shaped clip which snaps over the beaded end portion to thereby compress the diaphragm against the end portion. The clip has a peripheral rim about a recessed bottom end which stretches the patient's skin to facilitate the injection. According to one aspect of the invention, such an ampoule is designed to perform a subcutaneous injection. According to a further aspect of the invention, such an ampoule is designed to perform an intramuscular injection. According to a still further aspect of the invention, the ampoule includes multiple chambers for premixing a medicament with at least one other medicament and injecting the mixture, either subcutaneously or intramuscularly. Applicators designed to receive and hold the several forms of ampoules and to actuate them as required by their particular forms and functions provide several applicator-ampoule combinations of novel structure and functions.

3,797,491

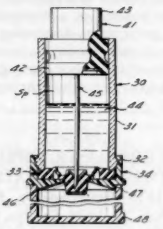
METHOD OF PERFORMING AN INTRAMUSCULAR INJECTION

Alfred A. Hurschman, Streetsboro, Ohio, assignor to Ampoules, Inc., Macedonia, Ohio

Division of Ser. No. 114,493, Feb. 11, 1971, Pat. No. 3,735,761. This application Aug. 24, 1972, Ser. No. 283,504

Int. Cl. A61m *5/28*

U.S. Cl. 128—218 DA **1 Claim**



Hypodermic ampoules of the contained-needle type, a method of assembling and filling such ampoules, and combinations of such ampoules with so-called "applicators" for actuating the ampoules to make injections are disclosed. Each of several ampoule forms has at least one cylindrical, medicament-containing chamber and a plunger closing one end thereof. A hollow needle is fixed to the plunger and is initially contained within such a chamber. The other end of the ampoule is sealed by a diaphragm which is pressed against a beaded end portion of a cylinder and is sealed thereto by a cup-shaped clip which snaps over the beaded end portion to thereby compress the diaphragm against the end portion. The clip has a peripheral rim about a recessed bottom end which stretches the patient's skin to facilitate the injection. According to one aspect of the invention, such an ampoule is designed to perform a subcutaneous injection. According to a further aspect of the invention, such an ampoule is designed to perform an intramuscular injection. According to a still further aspect of the invention, the ampoule includes multiple chambers for premixing a medicament with at least one other medicament and injecting the mixture, either subcutaneously or intramuscularly. Applicators designed to receive and hold the several forms of ampoules and to actuate them as required by their particular forms and functions provide several applicator-ampoule combinations of novel structure and functions.

3,797,492

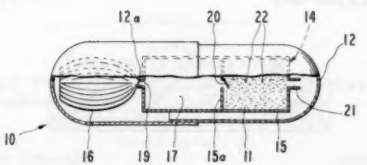
DEVICE FOR DISPENSING PRODUCT WITH DIRECTIONAL GUIDANCE MEMBER

Virgil A. Place, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Dec. 27, 1972, Ser. No. 318,900

Int. Cl. A61m *5/00*

U.S. Cl. 128—260 **13 Claims**



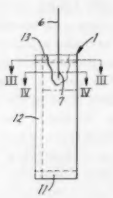
A drug product dispensing device is comprised of a product compartment having a metering means for dispensing its

product in a body cavity, and a propellant compartment communicating with the product compartment for producing a propellant. In one embodiment, a self actuated valve is positioned between the product and the propellant compartment for directing the flow of propellant into the product compartment. In another embodiment, a slidable piston is positioned in the product compartment for receiving the flow of propellant moving into the product compartment. A collapsed bag is joined to the propellant compartment with the bag capable of being inflated by a propellant from the propellant compartment to maintain the device in a product receptive area. The device is optionally housed in a bioerodible container and released therefrom prior to its dispensing a product. In both embodiments of the device, product is moved through the metering means by propellant either moving through the valves or against the piston to urge product through the means.

3,797,493
SINGLE USE CONTAINER, ESPECIALLY FOR PHARMACEUTICAL MATERIAL

Everett C. Saudek, 1613 Timberlane Dr., Portage, Mich.

Filed Nov. 20, 1970, Ser. No. 91,495
Int. Cl. A61m *7/00*; **B65d** *33/38*
U.S. Cl. 128—260 **19 Claims**

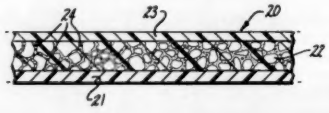


Single use container, especially for a pharmaceutical material. A heat sealable envelope is formed with the material to be dispensed inserted therein. A cord, which is looped or knotted, is positioned with the loop or knot within the envelope and the cord is arranged to extend outwardly thereof. Pulling of the cord outwardly of the envelope causes the loop or knot to rupture a portion of the envelope and the material can then be squeezed therethrough for use as desired.

3,797,494
BANDAGE FOR THE ADMINISTRATION OF DRUG BY CONTROLLED METERING THROUGH MICROPOROUS MATERIALS

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. Nos. 812,116, April 1, 1969, Pat. No. 3,598,122, and Ser. No. 812,117, April 1, 1969, Pat. No. 3,598,123, and Ser. No. 150,085, June 4, 1971, Pat. No. 3,731,683. This application Aug. 9, 1971, Ser. No. 169,976The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. A61l *15/06*
U.S. Cl. 128—268 **7 Claims**

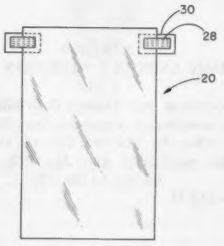


A bandage for use in the continuous administration of drugs to the skin or mucosa, comprising a backing member defining one exterior surface, a surface of pressure-sensitive adhesive defining a second exterior surface, and disposed therebetween a reservoir containing drug formulation confined therein. The reservoir can comprise a distinct layer of the bandage or a plurality of microcapsules distributed throughout the adhesive surface, and in either case the drug can be confined within an interior chamber of the reservoir or distributed throughout a reservoir matrix. The drug passes through drug release rate controlling microporous material which continuously meters the flow of drug by viscous or diffusive transfer to the skin or mucosa at a controlled and predetermined rate over a period of time.

3,797,495
PRESSURE SENSITIVE ADHESIVE TAPE AND DISPOSABLE DIAPER

George F. Schmidt, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 1, 1973, Ser. No. 328,731
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **10 Claims**

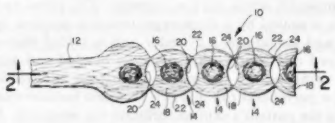


Pressure sensitive adhesive tape having a backsized, reinforced fibrous backing, a pigmented, plasticized polyvinyl chloride backsize, a release coat of silicone rubber, and an aggressively tacky adhesive of a block copolymer of isoprene and styrene tackified with a polyolefin and plasticized with an extended oil. Particular utility as a disposable diaper fastener is disclosed.

3,797,496
POST-EXTRACTION PADS

Vincent R. Loiacono, New London, Conn., assignor to Physio Medics, Inc., New London, Conn.

Filed May 6, 1972, Ser. No. 251,017
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **21 Claims**



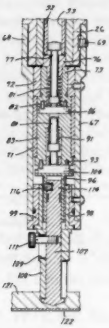
An anatomically contoured post-extraction pad made by compressing a piece of absorbent material to form an absorbent portion surrounded by a marginal portion of substantially greater density. The marginal portion is cut to generally complement facial contours of teeth adjacent an alveolus or tooth socket, whereby the pad is retained by and between the aforesaid teeth with its absorbent portion disposed in the alveolus. Assemblies of series connected pads may be provided for use in multiple extraction.

3,797,497

DRILL LIKE DRIVING DEVICE

Paul E. Crim, Portage, and Wayne Warfield, Kalamazoo, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Feb. 28, 1972, Ser. No. 229,680
Int. Cl. A64b 17/16; F16h 37/06
U.S. Cl. 128—310 4 Claims



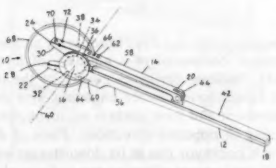
A driving device including a right-angle handpiece assembly having a casing containing an input shaft, an output shaft and means drivingly connecting same. A bone drill attachment is connectible to the handpiece assembly and includes a cylindrical extension mountable upon the output end of the casing and concentric inner and outer drill bits which project from said extension. The inner drill bit is connectible to the output shaft by a pair of clutch mechanisms which are normally spring-biased into a disconnected position. The outer drill bit normally rotates with the inner drill bit but is permitted to move axially and angularly relative to the inner drill bit through a predetermined distance. The cutting end of the inner drill bit extends axially beyond the cutting end of the outer drill bit. Alternately, a wire driving attachment can be connected to the handpiece assembly and includes a chuck structure mountable upon the output end of the casing and drivingly connectible to the output shaft. The chuck structure has a continuous opening therethrough which aligns with a through opening in the casing for receiving therein an elongated member, such as a wire.

3,797,498

PIVOTAL SURGICAL CLIP

David Joseph Walsh, Mississauga, and Harry Sydney Kerr, Willowdale, Ontario, both of Canada, assignors to Kerr Instruments Limited, Willowdale, Ontario, Canada

Filed June 29, 1972, Ser. No. 267,554
Claims priority, application Canada, June 9, 1972, 144289
Int. Cl. A61b 17/12
U.S. Cl. 128—325 14 Claims



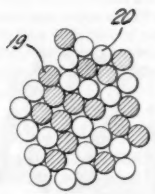
This invention relates to a surgical clip which may be attached to a blood vessel to block or restrict the flow of blood through the blood vessel. The clip comprises first and second elongated opposed members, pivot means located between the two opposed members which permit relative pivotal movement of the two members in a common plane, adjustable spring means urging the two opposed members to pivot about the pivot means to a closed position, and an enlongated blade member pivotally connected to the forward end of one of the two opposed members. The blade member has one elongated blade surface and the other opposed member has a second matched blade surface, between which the blood vessel is clamped. The fact that the blade member is pivotally connected to one of the opposed members permits the blade member to rotate slightly in the plane of the first and second opposed members to more evenly distribute the compressive force of the spring means across the blood vessel in the closed position. This avoids pinching of one portion of the blood vessel, and substantially reduces the possibility of injury or damage to the blood vessel. One of the blade surfaces has a channel with a uniform concave cross-section extending along a portion of its length. The wall of the clamped blood vessel bulges into the channel to securely laterally retain the clip on the blood vessel. A second embodiment of the invention has lips on opposite ends of one of the blade surfaces to maintain the blade surfaces in a predetermined spaced relationship, in the closed position.

3,797,499

POLYLACTIDE FABRIC GRAPHS FOR SURGICAL IMPLANTATION

Allan K. Schneider, Wilmington, Del., assignor to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 36,797, May 13, 1970, Pat. No. 3,636,956.
This application Oct. 6, 1971, Ser. No. 187,039
Int. Cl. A61l 15/04, 17/00
U.S. Cl. 128—334 R 6 Claims



Absorbable surgical sutures that are dimensionally stable within the body may be prepared by the extrusion of polylactide polymer, including copolymers of L(−) lactide with up to 35 mole percent of glycolide. Said polymers are characterized by an inherent viscosity of at least 1.0, and the extruded filaments are oriented by drawing at a temperature of about 50° to about 140° at a draw ratio of up to 11×, and annealed. Sutures so prepared have a tensile strength of from 25,000 p.s.i. to 100,000 p.s.i.

3,797,500

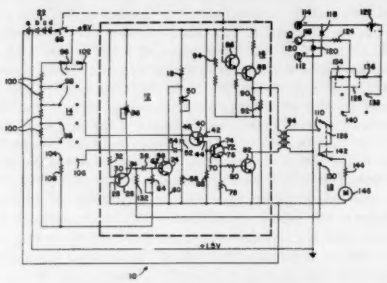
MANDIBLE STIMULATOR

James D. Porter, Seattle, Wash., assignor to Dr. Bernard Jankelson, Seattle, Wash.

Filed Dec. 29, 1969, Ser. No. 888,271
Int. Cl. A61n 1/36
U.S. Cl. 128—422 14 Claims

The mandible stimulator includes a pulse burst generator including a first solid state oscillator which modulates a second solid state oscillator. A coupling switch device between the two oscillators is connected to a pulse control circuit to vary

the number of pulses in each output burst. The pulse generator controls the output from an amplitude control circuit

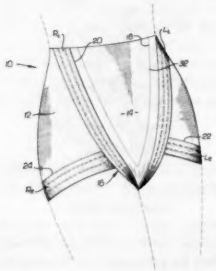


through an output transformer to an output electrode assembly. A test circuit is connected to measure the current flow through the output electrodes.

3,797,501
PANTY GIRDLE

Flavia Di Tullio, New York, N.Y., assignor to Munsingwear, Inc., Minneapolis, Minn.

Filed Dec. 26, 1972, Ser. No. 317,934
Int. Cl. A41c *1/02*
U.S. Cl. 128—528 **6 Claims**

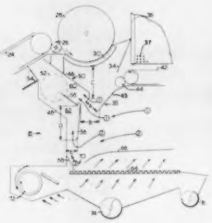


This improved panty girdle comprises a pair of leg forming components which define the skeletal structure of the girdle. The components each comprise a band of material having one end turned and closed upon the band to form a "*d*" and a "*b*" shaped configuration. The looped portions of the bands are joined together to form a conformable and comfortable crotch region, with the tail pieces of the components extending generally diagonally upwardly at places on the waistband located in juxtaposed relationship to the bony protuberance of the hip bone. A central control panel is inserted between the upwardly extending tail pieces, and a back panel completes the garment with frontally extending portions. The leg forming elements are made of stretch yarn and the remaining portion of the girdle is formed of two way stretch material. A balance of control is achieved between the stretch yarn band and its anchoring arrangement along with the stretch characteristics of the main body of the girdle.

3,797,502
PNEUMATIC CLASSIFIER FOR ROTARY THRESHING MACHINE

William B. Reed, and Floyd W. Bigsby, both of Saskatchewan, Canada, assignors to Western Roto Thresh Ltd., North Saskatoon Saskatchewan, Canada

Filed Mar. 9, 1972, Ser. No. 233,259
Claims priority, application Canada, Mar. 2, 1972, 136064
Int. Cl. A01f *12/24*
U.S. Cl. 130—27 R **4 Claims**

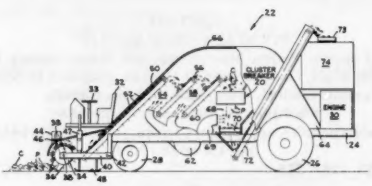


A pneumatic two-stage aspirator is provided for threshing machines to remove material other than grain from grain. The aspirator is placed below the concave of the threshing cylinder and a fan and baffle means create two levels of air suspension below the concave and through which the grain and chaff must fall. The material other than grain that is not removed in the first or upper level of air suspension is subjected to a further pneumatic suspension at the lower or second level.

3,797,503
CLUSTER BREAKER

Willy G. A. Dentant, St. Niklaas, and Gustaaf M. Persoons, Merksem, both of Belgium, assignors to International Machinery Corporation S.A., St. Niklaas-Waas, Belgium

Filed July 31, 1972, Ser. No. 276,868
Int. Cl. A01g *19/00*
U.S. Cl. 130—30 R **11 Claims**



Pod type vegetables are deposited singly and in clusters on a cluster breaker composed of a plurality of layers of spaced guide tracks. Endless conveyors guided by the tracks in their associated layers have cluster engaging pins projecting upwardly therefrom and have certain adjacent runs in the same layers moving in opposite directions. Pairs of driven cutters straddle each conveyor run at its downstream end for cutting each cluster into pieces allowing the individual pieces to fall downwardly for collection and allowing partial clusters cut from a larger cluster in the upper layer to fall downwardly to straddle a conveyor run in the next lower level for further separation.

3,797,504

SMOKING ARTICLES

Ivor Wallace Hughes, and Sydney James Green, both of London, England, assignors to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 885,615, Dec. 16, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 215,116

Int. Cl. A24d *01/02*

U.S. Cl. 131—15 B 1 Claim

A smoking article is disclosed wherein a constant supplementary air supply is afforded to the rear of the burning coal and through the combustible wrapper. The wrapper is modified to effect this by being treated with sodium or potassium chlorate in two longitudinally extending areas 40mm long and 5mm wide disposed rearwardly of the end to be lit. The concentration of the chlorate salt in the treated areas is from 0.1 to 0.7 mg per square centimeter. During smoking, the treated areas in the vicinity of the burning coal open to provide external air ingress apertures for the stated purpose.

3,797,505

PLANING INSTRUMENT FOR CALLOUSED SKIN

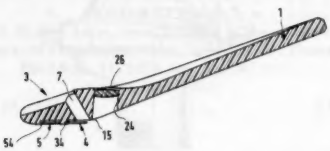
Heinz Gilhaus, Eichendorff-Strasse 9, 565 Solingen, Germany, and Maxence Villiers, 28, rue du Grenier St. Lazar 7/, 75 Paris, France

Filed Aug. 7, 1972, Ser. No. 278,484

Claims priority, application France, Aug. 10, 1971, 71.29190; Germany, Mar. 29, 1972, 2215376

Int. Cl. A45d *29/04*

U.S. Cl. 132—76.4 16 Claims



A planing instrument for corns in which a cutting blade is held by a clip to a planing head. The clip is of U-shaped section with side pieces which are sufficiently large to be readily gripped in one hand to remove the clip for blade replacement purposes. A transverse slot is formed in the planing head adjacent the blade and a portion interconnecting the planing head with a handle is formed with a lens. The head, interconnecting portion and the handle are formed of clear plastics to enable the planing operations to be viewed easily by a user of the instrument.

3,797,506

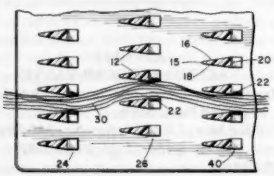
HAIR CLEANING IMPLEMENT

Arnold Otto Winfried Reinsch, 131 Carousel Ln., Del Mar, Calif.

Filed Oct. 27, 1972, Ser. No. 301,465

Int. Cl. A45d *24/04*

U.S. Cl. 132—137 7 Claims



An implement for cleaning, massaging and grooming of the hair and scalp using a plurality of rows of tapered teeth. The teeth in cross-section have a sharply cutoff base portion which cooperates with the tapered sides of the teeth to produce a cleaning action on hair drawn over the teeth, and cause the foreign material on the hair and scalp to be deposited on the base portions of the teeth. The foreign material is removed from the instrument by drawing a flat tool across the base portions of the teeth in each row. The teeth are inclined from the perpendicular to the body of the implement to cause the hair to be drawn into the implement as it is utilized. Adjacent rows of teeth are staggered and spaced by at least one tooth width to increase the cleaning action.

3,797,507

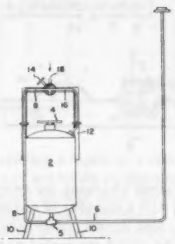
APPARATUS FOR CLEANING ENGINES

Kenneth R. Jackson, Rt. 1, Box 50, Zillah, Wash.

Filed Sept. 30, 1971, Ser. No. 185,169

Int. Cl. B08b *3/08, 9/00*

U.S. Cl. 134—102 3 Claims



An apparatus for cleaning automobile engines or the like wherein solvent is forced into the lubrication system of the engine and drained through the bottom of the oil drain pan. Following the forcing of a fluid solvent through the engine a vaporized solvent is then used to reach portions not penetratable by liquids. The fluid and vapor are alternated until the engine is clean at which time oil is forced into the entire engine. The oil is introduced by the same apparatus used for cleaning and assures the introduction of lubrication to all parts when the engine is again started.

3,797,508

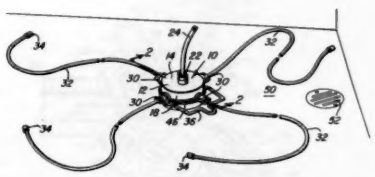
PORTABLE POOL CLEANER

Alexander J. Jacobs, 202 Orange Grove, San Fernando, Calif.

Filed Sept. 16, 1971, Ser. No. 181,057

Int. Cl. B08b *3/02, 9/00*

U.S. Cl. 134—167 R 8 Claims



A portable cleaner for swimming pools has a housing with walls defining a chamber, and ballast arranged in the housing for permitting the housing to be freely supported on a bottom surface of a pool. The housing walls define an inlet opening for passing a fluid into the chamber, and a plurality of orifices and outlet openings for passing the fluid from the chamber. A diverter, which advantageously forms the ballast, is arranged in the housing chamber for diverting the fluid from the inlet

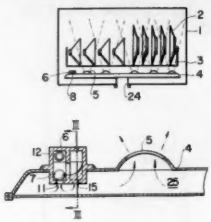
opening toward the outlet orifices and openings. The housing is provided with quick-disconnecting-type fittings for connecting supply and sweep hoses thereto, with the latter discharging fluid therefrom and causing agitation of the pool water.

3,797,509

TABLE WARE WASHER

Soichi Fukuzawa, and Ryoichiro Oshima, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1971, Ser. No. 176,068
Claims priority, application Japan, Aug. 28, 1970, 45-74867
Int. Cl. B08b *3/02*
U.S. Cl. 134—178 **7 Claims**



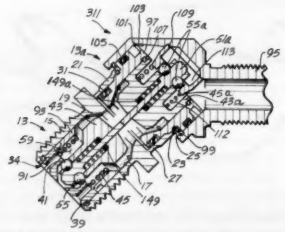
A device for alternately changing the swing direction of the nozzle arm provided with a plurality of nozzles and installed in a table ware washer; said device comprising two channels for conveying liquid to be jetted from said nozzles to swing the nozzle arm, each channel comprising a liquid inlet compartment and a liquid jet nozzle compartment, said two compartments being disposed opposite to each other with respect to the axis of the nozzle arm (e.g., when the nozzles of one channel are directed right with respect to the nozzle arm axis, the nozzles of the other channel are directed left with respect to the nozzle arm axis) so that the liquid flowing in said two channels is shut out alternately by the use of a ball. Thus, said device is capable of alternately changing the liquid jet direction and thereby changing the swing direction of the nozzle arm alternately.

3,797,510

CRASHWORTHY VALVE

Jorge Torres, Newbury Park, and George W. Lane, Camarillo, both of Calif., assignors to Purolator, Inc., Rahway, N.J.

Filed Oct. 28, 1971, Ser. No. 193,354
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **19 Claims**



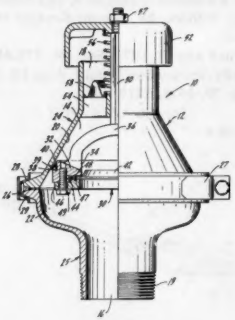
A crashworthy valve comprising a valve body having a passage therein, a valve seat in the passage, a valve element mounted for movement in the passage and biased toward a closed position in which it is in engagement with the valve seat to close the passage. A coupling interconnects the valve body to a member which is adated to carry fluid. The valve element is normally retained in an open position in which the valve element is spaced from the valve seat by at least a predetermined distance. The valve element is automatically released for movement to the closed position in response to relative axial movement between the valve body and the member of less than said predetermined distance.

3,797,511

COMBINATION PRESSURE-VACUUM RELIEF VENT-VALVE

Roger M. Selby, Munster, Ind., assignor to Union Tank Car Company, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,905
Int. Cl. F16k *17/16*
U.S. Cl. 137—71 **6 Claims**



A combination pressure-vacuum relief vent-valve for use in preventing excess pressure or vacuum within a railway tank car. The vent-valve includes a valve chamber having a first end adapted to communicate with the interior of the tank and a second end adapted to communicate with the atmosphere. Valve plug means is positioned within the valve chamber having a first position preventing fluid communication therethrough and a second position permitting fluid communication therethrough. The plug means is spring biased towards its first position in a manner which permits the plug means to assume its second position, and thereby relieve vacuum in the tank, only when the pressure differential between the first and second ends of the chamber exceeds a predetermined value. The plug means further includes a frangible element associated therewith to relieve excess pressure build up in the tank.

3,797,512

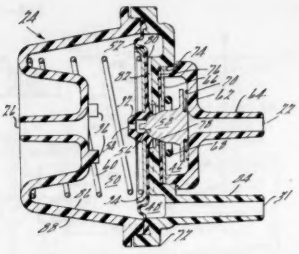
VACUUM REDUCER VALVE

Frank J. Martin, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 14, 1973, Ser. No. 340,991
Int. Cl. G05d *11/00*; **F02d** *5/02*
U.S. Cl. 137—116.5 **4 Claims**

A three-chamber vacuum reducer valve is used in the distributor spark advance control system to provide a source of vacuum for advancing the spark firing during engine overheat conditions. The source of vacuum is greater than the ported spark vacuum found upstream of the throttle plate in a carbu-

retor intake and less than the manifold vacuum. One input to the reducer is the manifold vacuum and the other input is at-

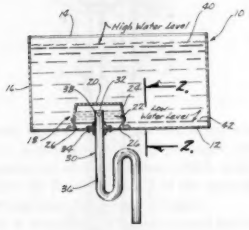


mosphere pressure which are combined by means of a regulator in the valve for producing an output vacuum which is reduced from the manifold vacuum.

3,797,513
DOSING SYPHON

Thamon E. Hazen, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa; by said Hazen

Filed Sept. 11, 1972, Ser. No. 287,672
Int. Cl. F04f *10/02*
U.S. Cl. 137—132 **6 Claims**

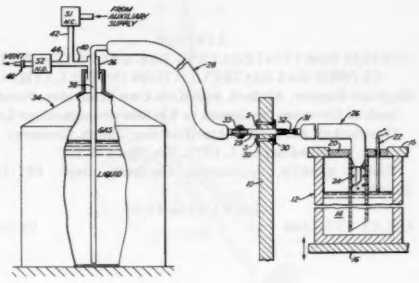


A dosing syphon for hydraulic transport of livestock and poultry wastes is disclosed. The dosing syphon comprises a fluid reservoir having a bell compartment means therein which is spaced from the bottom portion of the fluid reservoir. The bell compartment has a closed upper portion and a lower portion in communication with the interior of the housing for receiving fluid from the interior thereof. A substantiallly vertical conduit having an open upper end is positioned within the bell compartment and extends downwardly and outwardly through the housing. The vertical conduit includes a trap element for capturing a quantity of fluid therein. The vertical conduit has a fluid charging opening formed therein at the upper end therein above the bottom portion of the bell compartment so that a supply of fluid will be available to the trap while the fluid level rises within the bell compartment but before the fluid flows into the upper end of the compartment so that a constant supply of fluid will be available in the trap element.

3,797,514
AUTOMATED FILLER AND LEVER CONTROLLER FOR LIQUID NITROGEN

Robert E. Byers, New Kensington, and John Schmitt, Jeannette, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 27, 1972, Ser. No. 266,536
Int. Cl. B67d *5/54*
U.S. Cl. 137—212 **8 Claims**

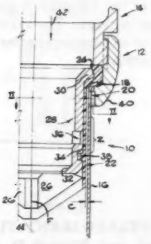


A system of supplying a liquid to a relatively small use vessel, such as a point of use inside an instrument, from a relatively large supply vessel remote from the use vessel, such as a large flask external to the instrument. The invention comprises a fluids conduit system controlled by a circuit operated by changing liquid level in the use vessel to pressurize the supply vessel to thereby flow liquid over to the use vessel. The circuit includes an RC portion to set the length of time that liquid flows.

3,797,515
VACUUM BREAKER

Andreas Buhler, Krugersdorp, South Africa, assignor to Castle Brass Works (Proprietary) Limited, Factoria, Luipaardsvlei Transvaal Province, South Africa

Filed Aug. 30, 1972, Ser. No. 284,967
Claims priority, application South Africa, Aug. 30, 1971, 71/5788
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 **2 Claims**



A vacuum breaker which has an inner member through which liquid flows, the inner member having a restricted outlet, a resiliently flexible sleeve closely fitting around the inner member, and a casing surrounding, with clearance, the sleeve. A ring of openings is formed in said member, and the sleeve and member sealingly engage with one another both upstream and downstream of the openings. When the interior of the member is under pressure, the sleeve is "bulged" outwardly into sealing contact with the casing by fluid passing through the openings. This cuts-off the communication which other-

wise exists, via said clearance, between air vents provided in the casing upstream of the openings and the interior of the breaker downstream of the outlet from the tubular member and sleeve. The outlet from the sleeve is normally closed by a plurality of flaps of the sleeve which are resiliently biased to their closed condition.

3,797,516

SYSTEM FOR CONTROLLING THE GAS PRESSURE IN A CLOSED GAS RECIRCULATION INSTALLATION

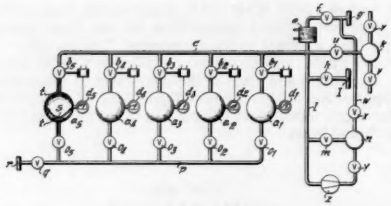
Siegfried Forster, Alsdorf, and Karl-Uwe Schneider, Betzdorf, both of Germany, assignors to Kernforschungsanlage Lulich Gesellschaft mit beschankter Haftung, Julich, Germany

Filed Sept. 13, 1971, Ser. No. 179,897

Claims priority, application Germany, Sept. 18, 1970, 2046078

Int. Cl. F16k *49/00*

U.S. Cl. 137—340 **18 Claims**



A system for controlling a closed gas-circulation installation, such as a gas-cooled nuclear reactor connected with a gas turbine for driving an electric generator, in which a bank or battery of pressure accumulators can be successively connected with the high-pressure side of the installation by individually set pressure-responsive valves for successive charging to different pressure levels when a charging valve common to the manifold of the accumulators is operated. When a discharging valve is operated, the manifold is connected to the low-pressure side of the installation and the accumulators successively discharge in stages. The system is used to control the rate of operation or to compensate for variations in the rate of operation of the turbine.

3,797,517

SELF-PROPELLED IRRIGATION APPARATUS

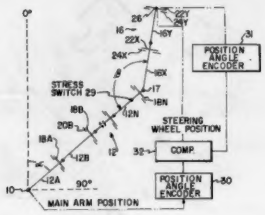
Robert J. Kircher, and Richard D. Setty, both of Sterling, Colo., assignors to Sterling Square Sprinkler Company, Inc., Sterling, Colo.

Filed Oct. 24, 1972, Ser. No. 300,426

Int. Cl. B05b *9/02*; **E01h** *3/02*

U.S. Cl. 137—344 **4 Claims**

Self-propelled irrigation apparatus for watering non-circular areas includes a main arm assembly pivoted at one end and supported at intervals by self-propelled support towers. An extension arm assembly, mounted on self-propelled support towers having steerable wheels, has one end pivotally connected to the free end of the main arm assembly for irrigating portions of the field outside the circular area traversed by the main arm. Electrical control means are provided to rotate the extension arm assembly relative to the main arm assembly as the latter rotates by turning the steerable wheels of the extension arm. The control means comprises a reversible motor energized by a circuit including banks of switches, the settings of which correspond, respectively, to the angular position of the main arm and the direction in which the steerable wheels are turned.



3,797,518

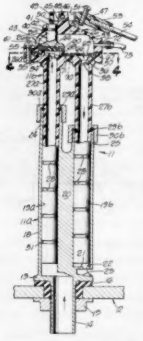
ADJUSTABLE HEIGHT BALLCOCK ASSEMBLY

James P. Holm, Fullerton; Rolland P. Van Gerpen, Los Angeles, and Maurice E. Paradis, Brea, all of Calif., assignors to Kirkhill Inc., Downey, Calif.

Filed Aug. 9, 1972, Ser. No. 279,201

Int. Cl. F16k *31/18*

U.S. Cl. 137—434 **16 Claims**



A ballcock assembly fabricated of a plastic material, in which the standpipe is unitized to include both the water supply line and tank delivery line, and is sectionalized to provide upper and lower sections telescopically interconnected for variable height adjustment to meet the different installation requirements necessitated by a variety of types and sizes of toilet flushing tanks.

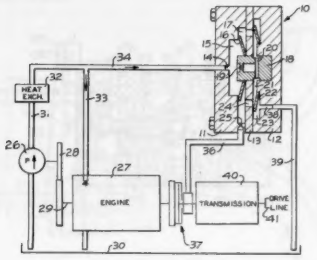
The upper section of the standpipe carries a valve housing for a float-operated valve with an inlet flow throttling mechanism that operates in successive stages to first cause a greater than normal submergence of the float, and secondly to release the float for operation with a snap-action to move the valve to fully closed position.

Further, the assembly embodies innovations for substantially reducing the operational noises.

3,797,519
MULTISTAGE FLOW CONTROL VALVE

Thomas E. Allen, Mustang, Okla., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 5, 1971, Ser. No. 195,967
Int. Cl. F16k *15/08, 15/14*
U.S. Cl. 137—512 **7 Claims**

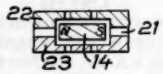


A multistage flow control valve utilizes a plurality of Belleville springs as valving elements which are positioned in a housing and responsive to successive predetermined pressures to divert fluid to selective successive outlets.

3,797,520
FLUID OPERATED LOGIC ELEMENTS

Simeon Lekarski, Saint-Cloud; Pierre Hardy, and Leon Hardy, both of Paris, all of France, assignors to Jean Gachot, Enghien-Les-Baines, France; a part interest

Filed June 30, 1971, Ser. No. 158,218
Claims priority, application France, July 2, 1970, 70.24652
Int. Cl. F16k *15/00*
U.S. Cl. 137—517 **1 Claim**



Fluid-operated logic elements are disclosed which comprise a compartment, a plurality of fluid passages communicating with the compartment and a member which is movable within the compartment by fluid from one of the passages to control the intercommunication between passages.

The member is magnetic and is arranged to coact magnetically with other magnetic means associated with the compartment to define at least one stable position for the member in the compartment. The number and relative positions of passages and the number of stable positions of the member determine the logical function of the element.

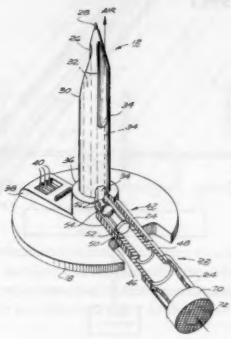
The elements can be combined in various ways to provide logic systems.

3,797,521
DISPENSING CLOSURE FOR PARENTERAL FLUID CONTAINER

Olin B. King, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Filed Aug. 2, 1972, Ser. No. 277,243
Int. Cl. F16k *15/04, 15/14*
U.S. Cl. 137—525.7 **14 Claims**

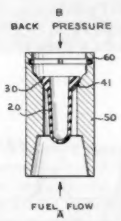
The closure device has a novel, virtually leak-proof check-valve in its breather tube which allows air or other fluids to flow into the dispensing bottle to replace liquid which has been dispensed from the bottle, but does not allow liquid to flow out. The check-valve has a flexible disk which is seated against a valve-seat by a weighted ball. The ball travels inwardly away from the valve-seat and outwardly towards the valve-seat on longitudinal splines which form tracks on which the ball rolls. The weight of the ball forces the flexible disk against the seat until external pressure exceeds internal pressure by a moderate amount. Then, the ball moves upwardly along the tracks, the disk lifts off of the valve-seat, and air or other fluids under pressure are allowed to enter the bottle. The valve-seat is formed by a sharp raised edge around the fluid passage hole. At the innermost ends of the splines are projections forming a stop for the ball. The other ends of the splines form a stop for the disk. When the ball rests against the disk, it depresses its center portion inwardly to form a tight seal against the raised ridge of the valve seat.



3,797,522
ANTI-KNOCK FLOW VALVE

William A. Carleton, Pine City, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 76,921, Sept. 30, 1970, abandoned.
This application July 27, 1972, Ser. No. 275,594
Int. Cl. F16k *15/14*
U.S. Cl. 137—528 **1 Claim**

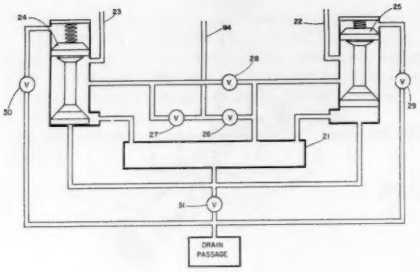


An automatic check valve operable to permit flow of a fluid through a passage in one direction and to prevent flow in the opposite direction with means for relieving back pressure is provided. The valve is fabricated from a flexible material and is of unitary design with an expandable tubular body which has a closed upstream end that tapers toward an open circular thick-walled downstream end. The tubular body of the valve expands to absorb shock waves generated by the valve under the influence of back pressure thereby eliminating the noise produced by the sonic hammer effect.

3,797,523
LOW PRESSURE DROP WATER SOFTENER VALVE ASSEMBLY WITH DUAL PISTONS

Earl P. Brane, 9470 Ulmerton Rd.; Douglas K. Brane, 280 Fourth St., N.W., both of Largo, Fla.; Robert E. Marsh, 5521 Willow View, Racine, Wis., and Hilton H. Hammond, 6644 Gulfport Blvd., St. Petersburg, Fla.

Filed Sept. 11, 1972, Ser. No. 288,116
Int. Cl. B01d *29/38*
U.S. Cl. 137—599.1 8 Claims

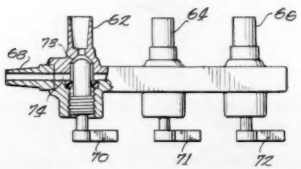


A water softener valve assembly for directing water flow for the softening of water and for the regeneration of the water softener tank. A housing has a pair of slidably mounted pistons which are movable to open and closed positions directing the flow of water. In the open position, the incoming hard water is directed to the soft water tank with a minimum length of travel and bends. Subsequent to the softening, the water is directed through the assembly and to the user. Various control valves are provided for directing brine into the water softener tank and for refilling the brine tank with water for regeneration of the water softener tank. During regeneration, the incoming hard water is directed through a bypass passage and immediately to the outlet in a hard condition preventing interruption of water flow to the user. Control valves are provided for controlling the movement of the pair of pistons.

3,797,524
FLUID METERING DEVICE

Edward T. Sanelli, Buffalo Grove, Ill., assignor to Reedmer Plastics Inc., Franklin Park, Ill.

Filed June 15, 1972, Ser. No. 263,153
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 4 Claims

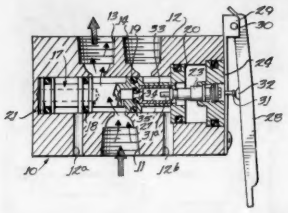


Metering apparatus for receiving fluid from one or more sources and delivering the fluid at a controlled rate through one discharge outlet. The apparatus is particularly useful for administration of parenteral solutions. Where the apparatus has a plurality of inlet ports, the flow of fluid through each port is capable of precise and separate control.

3,797,525
PILOT VALVE

Mathias J. Lieser, Chicago, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,527
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.6 2 Claims

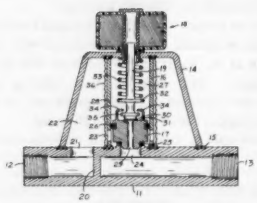


A pilot valve construction is illustrated having a single inlet port and first and second outlet ports selectively to be in fluid communication with the inlet. A cylindrical bore passes through the valve body and a cylindrical slide element having enlarged diameter portions, acting as sealing walls, is slidable within the cylindrical bore so that fluid flow can pass through a shuttle chamber formed by two of the enlarged diameter portions. The slide element has one end thereof operatively associated with a fluid flow control chamber which receives a fluid pressure from the inlet port through a bleed passage. This causes the slide element to be shifted to a predetermined position. Upon venting or otherwise changing the pressure within the control chamber, the slide element will shift to a second position thereby changing the fluid flow from the first outlet port to a second outlet port. Fluid flow control means is associated with the control chamber to vary the pressure therein to cause movement of the slide element

3,797,526
CAGE VALVE WITH PILOT AND MECHANICAL OPERATING MEANS

Edwin B. Champeon, R.R. Box 126, Port Byron, Ill.

Filed Aug. 21, 1972, Ser. No. 282,334
Int. Cl. F16k *31/40*
U.S. Cl. 137—630.14 3 Claims



A valve of the cage type has a pilot control seal connected to a solenoid assembly for operation by usual pilot means for medium and high pressure systems and in addition has a lost-motion connection between the solenoid assembly and a control piston that contains the pilot control seal. After the pilot control seal is operated, the solenoid assembly applies force through the lost-motion connection to move the control piston to an open position to provide positive control when the pressure is too low to operate the valve by pilot means only.

3,797,527

LATERAL THRUST UNITS

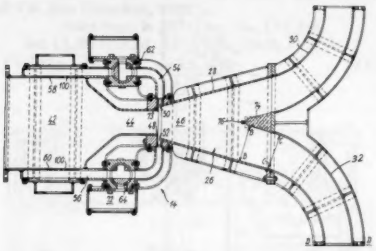
Donald Cyril Bain, Gawcott, England, assignor to National Research Development Corporation, London, England

Filed Feb. 7, 1972, Ser. No. 224,075

Claims priority, application Great Britain, Feb. 10, 1971, 4377/71

Int. Cl. F15c *3/00*

U.S. Cl. 137—832 **12 Claims**



A digital rapid response lateral thrust unit in which the deliberately unstable nature of the design is overcome by bleeding off relatively large proportions of the incoming liquid flow for reintroduction as control jets. These jets are effective to divert the liquid flow to one or other of two tapering outlet ducts, the split flow zero thrust condition being achieved by cutting off the supply of control fluid and connecting together the discharge slots for the control jets. Use of the unit as a simple flow diverter in a liquid transfer assembly is also described.

3,797,528

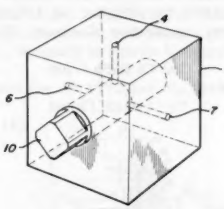
VARIABLE FLOW FLUIDIC TRANSDUCER

Adolf F. Beckert, St. Paul, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 7, 1972, Ser. No. 222,416

Int. Cl. F15d *1/00*; **G01b** *13/00*

U.S. Cl. 138—46 **3 Claims**



A variable resistance fluidic transducer having a housing forming a generally cylindrical chamber, a spool positioned within the chamber, a circumferencial channel formed in the spool, an input port through said housing for supplying fluid to a metering slot formed in the spool, the metering slot cooperating with the channel, and a pair of outlet ports through said housing and cooperating with said channel for receiving the fluid and providing a differential output.

3,797,529

SUPPORTING AND INSULATING DEVICE FOR A PIPING SYSTEM

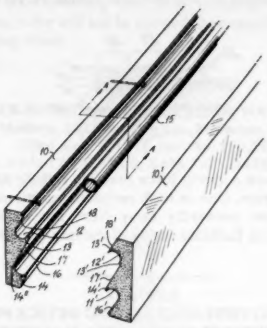
Sven Runo Vilhelm Gebelius, Fridhemsgatan 27, 112 40 Stockholm K., Sweden

Filed Dec. 17, 1971, Ser. No. 209,187

Int. Cl. F16l *9/22*, *3/22*

U.S. Cl. 138—111 **1 Claim**

A supporting and insulating device for pipes comprising a pair of elongated, thermally insulating elements having joining faces presenting one or more lengthwise running grooves shaped to complement one another completely to embrace the pipe or pipes when the elements are placed together about the pipe or pipes, each of said groove or grooves being hook shaped in cross section and individually capable of supporting and locating a pipe inserted in the groove once the element has been fixed in position and prior to the other element being attached to it.



3,797,530

HOSE PIPES

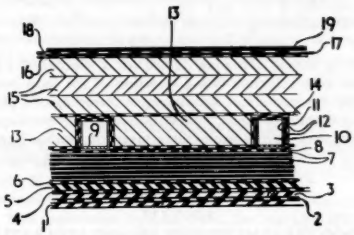
John Ambrose, and Edmund J. Shephard, both of Brimsby, England, assignors to Dunlop Holdings Limited, London, England

Filed Apr. 12, 1971, Ser. No. 133,011

Claims priority, application Great Britain, Apr. 15, 1971, 17855/71

Int. Cl. F16l *11/00*

U.S. Cl. 138—137 **7 Claims**



A flexible hosepipe for carrying slurry or solid particles provided with a lining comprising a first layer of hard, abrasion and cut-resistant rubber and a second cushioning layer of soft rubber behind the first layer. The hosepipe may be self floating and each length may have end fittings connected during the assembly of the hose, of which the following is a specification.

3,797,531

CLAMP AND REINFORCING RING FOR PIPE WRAPPING

Vernon R. Fencl, Northbrook, Ill., assignor to Grotnes Machine Works, Inc., Chicago, Ill.

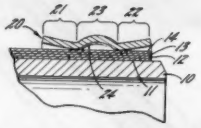
Filed Feb. 22, 1972, Ser. No. 227,797

Int. Cl. F16l *9/04*

U.S. Cl. 138—147 **3 Claims**

A clamping and reinforcing ring for a pipe wrapped with high strength metal strapping. The clamping and reinforcing

ring comprises a unitary metal annulus which is fitted over the wrapped pipe, and having a concave inner surface in the central portion of the annulus. When the wrapped pipe is expanded in the radial direction, the concave portion of the annulus is deformed to increase the radius of curvature and



thereby produce a spring force pressing radially inwardly on the wrapped pipe. One or both peripheral portions of the annulus are bent outwardly away from the surface of the wrapped pipe to facilitate fitting of the ring over the wrapped pipe.

3,797,532

FILLING THREAD CLAMPING DEVICE FOR A SHUTTLELESS WEAVING MACHINE

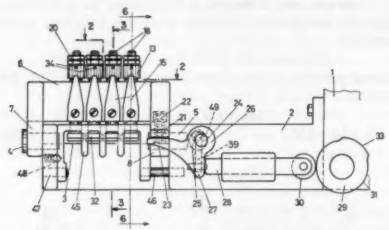
Paul Haltmeier, Brugg, Switzerland, assignor to Georg Fischer AG. Brugg, Brugg, Switzerland

Filed Sept. 23, 1971, Ser. No. 183,006

Claims priority, application Switzerland, Sept. 24, 1970, 14256/70

Int. Cl. D03d 47/34

U.S. Cl. 139—194 **10 Claims**



A filling thread clamping device for a shuttleless weaving machine with selective filling insertion of the loop insertion principle, for periodical, simultaneous clamping of a plurality of filling threads between their stationary supply packages and the warp shed during each filling insertion, with a fixed and movable clamping part, actuated by the weaving machine in the cycle of the filling insertion.

3,797,533

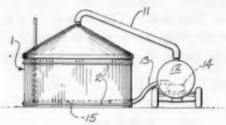
FOOD TREATMENT PROCESS AND APPARATUS

John J. Mackin, Jr., 907 E. Mason St., Green Bay, Wis.

Filed July 3, 1972, Ser. No. 268,492

Int. Cl. B65b 1/00

U.S. Cl. 141—1 **5 Claims**



Brine treated cucumbers and the like are removed from the treating vat by flushing with additional brine from a receiving tank and providing a suitable transfer passage from the vat to the tank.

The vat has a generally conical cover sealed with the sides and with an outlet connection for a pipe to conduct overflow brine and cucumbers to a receiving tank.

3,797,534

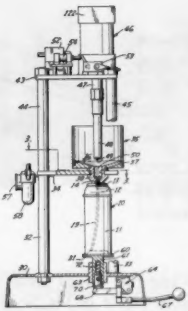
POWER OPERATED MEANS FOR FILLING AEROSOL CANS

Richard H. Skidmore, Lyndhurst, Ohio, assignor to Sprayon Products Inc., Bedford Heights, Ohio

Continuation of Ser. No. 803,665, March 3, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,720

Int. Cl. B65b 3/12

U.S. Cl. 141—3 **13 Claims**



An apparatus and method for filling aerosol cans containing a liquid propellent with a material to be dispensed in which a power operated piston is employed to force the material into the aerosol can through a discharge valve of the can. A substantially uniform force is applied to the piston to insure that essentially uniform quantities of material are injected into the can with each stroke of the piston.

3,797,535

FILLING PIPE-FREE FILLING STRUCTURE WITH SEPARATE CONDUITS FOR THE TENSION AND RETURN GAS AND FOR WITHDRAWING EXCESS FLUID

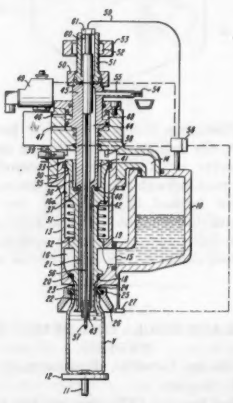
Klaus Kaiser, Bad Kreuznach, Germany, assignor to Seitz-Werke & GmbH, Bad Kreuznach, Germany

Filed Feb. 18, 1971, Ser. No. 116,464

Claims priority, application Germany, Feb. 20, 1970, 2007896

Int. Cl. B65b 31/06

U.S. Cl. 141—46 **5 Claims**



A filling device for filling containers, such as bottles, in which a return conduit extends into the container being filled

and leads therefrom to a discharge region. A liquid level detecting element is disposed at the lower end of the return conduit and senses the rising liquid level in the container and controls the supply of liquid thereto.

3,797,536

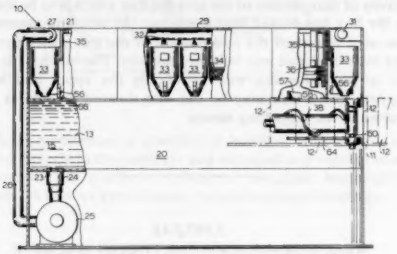
HIGH-SPEED LIQUID DISPENSER

Peter J. Pinto, Union City; Donald M. King, Alameda, and Roy B. McCarthy, San Leandro, all of Calif., assignors to Leslie Salt Co., San Francisco, Calif.

Filed Sept. 2, 1971, Ser. No. 177,366

Int. Cl. B67c *3/20*; **B67d** *5/02*; **B65b** *3/06, 3/32*

U.S. Cl. 141—134 **12 Claims**



A high-speed device for dispensing a volumetrically measured liquid charge into each of a series of containers. A continuous chain moves a series of dispensing units around a closed path that overlies a container conveyor line. Each unit measures its charge and spills any excess back to the supply. Each conveyed container is aligned with one dispensing unit and moves with it in alignment along a straight path; the container actuates an outlet from the unit through which the liquid is dispensed into the container.

3,797,537

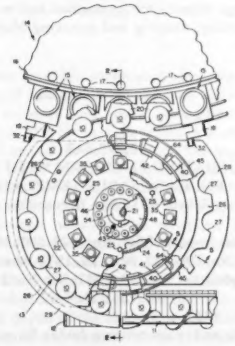
NO-CAN NO-FILL FEEDING STAR WHEEL

Adelmar Faessler, Rochester, and Stewart E. Engle, Fairport, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,588

Int. Cl. B65b *57/02*

U.S. Cl. 141—142 **17 Claims**



A no-can no-fill mechanism is incorporated in a star wheel which feeds containers to a rotating filling wheel. A fluidic sensor, a cam, and control means for moving the cam are positioned at each pocket on the star wheel. The cams are normally in position to open filling valves on the filling wheel. When one of the pockets does not pick up a container at the normal point, the sensor and control means at that pocket move the corresponding cam to an inoperative position, so that a filling valve will not be opened at an empty filling station on the filling wheel.

3,797,538

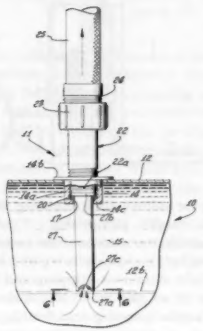
FILLER-SIPHON ASSEMBLY FOR A WATER BED

Carlos A. Mollura, 2824 Del Oro Ln., Fullerton, Calif.

Filed Aug. 9, 1971, Ser. No. 170,216

Int. Cl. A47c *17/86, 27/00*; **A61g** *7/00*; **B67d** *5/02, 5/37*

U.S. Cl. 141—313 **3 Claims**



A filler-siphon assembly for a water bed includes an adapter body bonded to the mattress and extending through an opening therein. A hose connecting nipple and clamp nut thread into the adapter body to fill the bed, and cooperate with a notch-ended dip tube inserted through the adapter body into the mattress interior to empty the bed. A plug is tool-inserted into the adapter body to seal the water bed when filled.

3,797,539

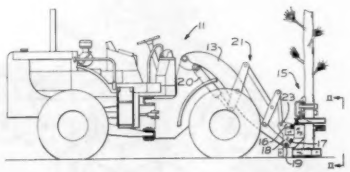
PULPWOOD HARVESTER

Raymond L. Moser, Tremont, and Dorrance Oldenburg, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 829,882, June 3, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,377

Int. Cl. A01g *23/08*

U.S. Cl. 144—3 D **19 Claims**



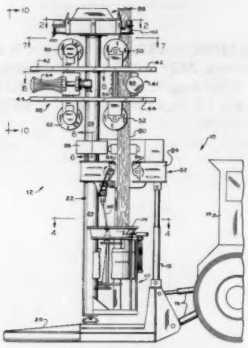
A pulpwood harvester mounted on a vehicle and comprising a set of delimbing blades, a set of rollers for moving a tree trunk past the delimbing blades, and a cut-off blade for severing the trunk near the ground.

3,797,540

TIMBER HARVESTING MACHINE

Robert L. Propst, 2347 Londonderry Ave., Ann Arbor, Mich.

Filed Apr. 10, 1972, Ser. No. 242,732
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **13 Claims**



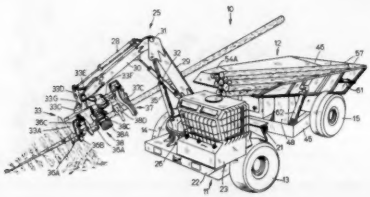
A machine for converting standing trees into logs of predetermined length comprising a tree severing and processing assembly mounted on the front end of a vehicle. The assembly includes a tree severing unit located close to the ground, an upright mast, tree gripping and feeding assemblies rotatably mounted on the mast, tree delimbers on the mast corresponding to the gripping and feeding assemblies, a tree cutoff unit, and a log storage rack arranged so that the assembly has a tree severing station and a tree processing station. At the tree severing station, the tree is severed from the ground, and lifted while being maintained in a vertical position. The severed tree is then rotated about the mast to the processing station where it is fed downwardly through a delimbing unit which functions to remove limbs from the tree and past the cutoff unit which functions to cut the tree into log lengths. The thus formed logs are then stored temporarily in the log storage rack and periodically ejected therefrom for use, such as in a pulp paper plant.

3,797,541

MACHINE FOR HARVESTING AND ACCUMULATING TREES

John Kurelek, Brantford, and Victor E. Locker, St. George, Ontario, both of Canada, assignors to Koehring Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,564
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **14 Claims**



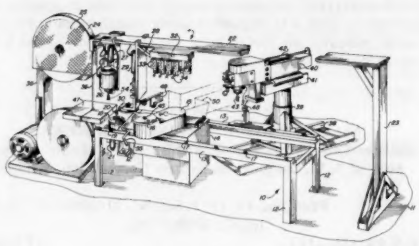
A tree harvesting machine of the articulated type having a boom mounted tree-processing means at its front end and a felled tree accumulating box at its rear end. The tree-processing means is selectively rotatable on the boom and comprises selectively operable releasable gripping means, severing means, propelling means and delimbing means. The accumulating box comprises an upwardly tilted trough open at its front end and log directing means in the form of a downwardly sloped ledge are provided adjacent the open end of the trough. A tailgate is provided at the rear end of the box. The forward end of the box is upwardly movable by hydraulic cylinders to increase trough tilt during unloading. In the method of operation, a standing tree is grasped by the gripping means, severed from its trunk while upright, tipped forwardly to felled position by rotation of the gripping means so that its severed or butt end faces the box, and moved axially rearwardly and upwardly by the propelling means over the log directing ledge near the box, while the limbs are simultaneously removed by the delimbing means. When the center of gravity of that portion of the severed tree which is to be loaded in the box has moved past the ledge, the severing means are operated to cut off the said portion of the tree which portion tips over the ledge and falls into the box. The machine is usable to harvest entire trees with only the upper end being topped. Or, a tree may be cut into desired lengths as it is moved by the propelling means.

3,797,542

REEL FLANGE MANUFACTURING MACHINE

Paul R. Wood, 4098 No. 35th Ave., Phoenix, Ariz.

Filed Oct. 10, 1972, Ser. No. 296,236
Int. Cl. B27c *9/04*
U.S. Cl. 144—4 **10 Claims**



A reel flange manufacturing method and machine for simultaneously cutting, shaping and grooving blanks into finished reel flanges.

3,797,543

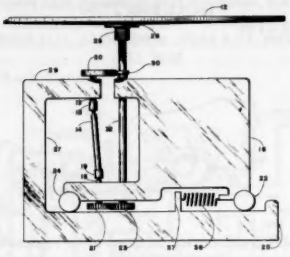
MATERIAL SHAPING PLATFORM WITH MULTIPLE OR EXCHANGEABLE TEMPLATES

Friedrich Peter Schell, 4313 San Bernardino Ave., Las Vegas, Nev.

Continuation-in-part of Ser. Nos. 129,507, March 30, 1971, and Ser. No. 198,727, Nov. 15, 1971, abandoned. This application Dec. 30, 1971, Ser. No. 214,007
Int. Cl. B27c *5/02*
U.S. Cl. 144—145 **10 Claims**

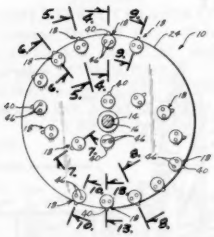
A rotatable and reciprocating device for supplying material workpieces to be shaped to a shaping tool comprises a platform to which the workpieces are attached, a template disposed adjacent the platform, a guide member abutting the template, and a biasing means cooperating with the platform for constantly maintaining the template and guide member in

abutment. In one embodiment, the guide member or template are attached to an axle for the rotatable platform while the other of these members is secured to a stationary member. In



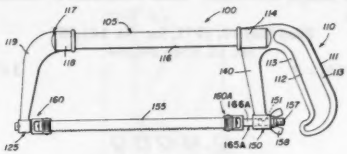
another embodiment, a plurality of template surfaces are attached directly to the platform and arranged in a vertical stack relative to the platform surface or arranged horizontally thereon. A further embodiment includes a pivotal carriage.

3,797,544
CUTTER DISC
Alonzo Ver Ploeg, Rt. No. 1, Pella, Iowa
Filed July 21, 1972, Ser. No. 274,082
Int. Cl. B27g *13/04*; A01g *23/06*
U.S. Cl. 144—235 **10 Claims**



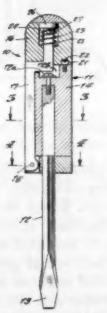
A stump cutting machine includes a rotatable cutter disc having a plurality of cutter tools on opposite sides thereof and each of the tools includes a bit holder having half sections for clamping the shank of a bit therebetween in a slot formed in the mating face of one of the half sections. The mating faces of the half sections are in a plane extending at an angle to the disc such that the bit extends at an angle to the disc and radially outwardly from the disc center axis of rotation. The bit holder may be turned between two positions 180 degrees apart and the bit will extend outwardly relative to the disc in one position and inwardly relative to the disc in the other position. A pair of bolts extend through the holder half sections and the disc to connect two holders on the disc on opposite sides thereof. The depth of the slot perpendicular to the face thereof is less than the thickness of the bit shank to assure clamping action by the two half sections when drawn tightly together. The bits include a cutting head having a depth limiting shoulder such that all bits extend uniformly into the bit holders at equal distance and are limited by the shoulders engaging the outer edge of the holder.

3,797,545
BLADE HOLDER
Raymond C. Dreier, Chicago, Ill., assignor to Dreier Brothers Inc., Chicago, Ill.
Division of Ser. No. 228,224, Feb. 22, 1972. This application Mar. 15, 1973, Ser. No. 341,365
Int. Cl. B27b *21/02*
U.S. Cl. 145—33 A **4 Claims**



A blade holder for a handsaw construction for holding a saw blade having an aperture in one end thereof, the handsaw construction including a longitudinally extending saw frame having a handle at the rear end thereof and a front leg at the front end thereof and a rear leg intermediate the front leg and the handle, tensioning means on at least one of the legs for securing thereto the other end of the saw blade and a blade holder on the other of the legs for securing thereto the one end of the saw blade, the blade holder including a first clamping member engaged by the other leg and having a first clamping surface with an elongated opening therein, the first clamping surface supporting the saw blade thereagainst with the aperture therein overlying the opening, a second clamping member shiftably mounted on the first clamping member and having a second clamping surface for cooperation with the first clamping surface to hold the saw blade therebetween with a finger on the second clamping surface extending therefrom, movement of the finger toward the one leg camming the first and the second clamping surfaces toward each other and against the associated saw blade, the second clamping member being movable between a saw blade receiving position and a saw blade clamping position, operation of the tensioning means to tension the saw blade moves the finger and cams the clamping members to the clamping positions thereof with the saw blade clamped therebetween. The second clamping member may be mounted on the first clamping member for pivotal or shiftable movement with respect thereto.

3,797,546
LEVERAGE OPERATED SCREWDRIVER
Andrew T. McGee, c/o George Spector, 3615 Woolworth Bldg., 233 Bdwy., New York, N.Y.
Filed June 6, 1972, Ser. No. 260,212
Int. Cl. B25g *1/00*
U.S. Cl. 145—61 L **4 Claims**



A screwdriver of improved design and which is of the type wherein the screwdriver handle consists of two sections placed

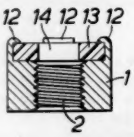
with ends adjacent each other, one section being secured to the screwdriver shank and the other being sidewardly pivotable to form a leverage arm to exert a stronger turning force on the tool.

3,797,547

METHOD OF PRODUCING A LOCKING NUT WITH AN INSERT

Katsumi Shinjo, 8,6-Chome, Asahi Minamidori, Nishinariku, Japan

Filed May 10, 1971, Ser. No. 141,687
Int. Cl. F16b *39/284*
U.S. Cl. 151—7 3 Claims



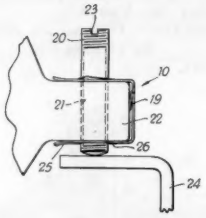
A method of producing a locking nut with a resilient insert on its face is disclosed. An ordinary four-sided nut is pressed between a die provided with a flared opening, and a punch provided with a tapered lower end to match the shape of the die. Each corner of the nut is drawn to produce outwardly opening thin tabs, which tabs are subsequently folded over an insert placed on the nut.

3,797,548

SPRING CLIP

Barry Roger Michael Barnett, West Drayton, England; Clifford Alexander Seckerson, deceased, late of Iver Heath, England; Teresa Agnes Seckerson, and Michael Alexander Seckerson, both of Iver Heath, England, assignors to TRW Inc., Cleveland, Ohio

Filed July 13, 1972, Ser. No. 271,333
Claims priority, application Great Britain, July 29, 1971, 35694/71; Jan. 17, 1972, 2141/72
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.75 5 Claims



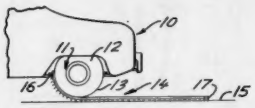
A threaded fastener passing through a bore in a member is axially loaded by a spring metal clip. The clip has two spaced, substantially parallel arms joined by a vertical web and the arms have aligned fastener receiving openings formed therethrough. The clip is mounted on the member with the openings in the arms disposed at opposite ends of the bore. One of the arms is divided into two sections by a slot passing through the opening therein and into the web. The sections of the latter arm are engaged by the threaded fastener and spread apart both radially and axially and thereby exert a vibration resisting tension on the threaded fastener.

3,797,549

DETACHABLE TREAD DEVICES FOR AUTOMOBILE TIRES

Friedel Lieberum, 211 St. Patrick's Ave., North Vancouver, B.C., Canada

Filed June 12, 1972, Ser. No. 262,003
Int. Cl. B60c *27/06*
U.S. Cl. 152—175 7 Claims



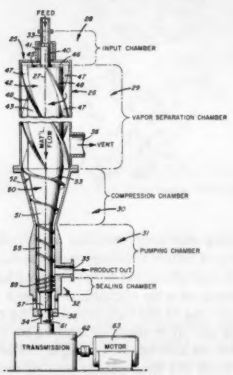
Detachable tread device adapted to be releasably secured to tires to improve traction thereof. Device has flexible base having sufficient length to encircle tread face of tire and has projecting means extending from one surface adapted to run on road surface, and has suction means extending from opposite surface adapted by deformation to be brought into operative engagement with, and to grip, tread face of tire, thus releasably securing tread device to tire. Overlap of ends is tapered to provide smooth join between ends. Device is fitted to tire by lying device flat on road surface aligned with tire with suction means face upwards, so that, when side edges of tread device straddle tire symmetrically, tread device is secured to tire by rolling tire over tread device.

3,797,550

WIPED FILM DEVOLATILIZER CONSTRUCTION

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 171,988
Int. Cl. B01d *1/28*
U.S. Cl. 159—2 E 7 Claims



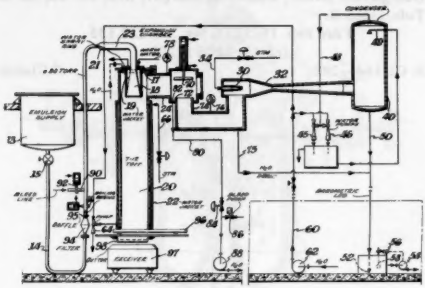
A wiped film devolatilizer adapted for processing relatively viscous melts is provided wherein a melt is end center fed to, and bottom removed from, a vapor separation chamber. Volatiles separated are cocurrently moved with melt through the vapor separation chamber before venting. The rotating members are preferably driven on a common axis by an end located power head. Melt hang up in the separation chamber is minimized or eliminated in the melt feed region; foaming problems are minimized in the vapor vent region; and devolatilizer weight distribution may be such that structural fabrication problems are minimized.

3,797,551

SOLIDIFICATION OF GELATIN EMULSIONS

Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Fritz Maus, Cologne-Flittard; Kurt Browtzki, Opladen; Josef Friedsam, Langenfeld; Willi Wasser, and Wolfgang Schweicher, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 21, 1971, Ser. No. 164,565
Int. Cl. B01d *1/16, 17/00*; B02c ; F26n *3/12*; B01d *19/00, 1/22*; B28
U.S. Cl. 159—3 17 Claims



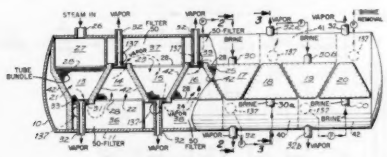
Warm dilute aqueous gelatin emulsions are readily and speedily concentrated and solidified by sucking a stream of such emulsion through a passageway into an expansion chamber evacuated to 7–12 Torr to cause the incoming emulsion to boil and spray solidified droplets of emulsion onto the walls of the chamber in bubble-free form. The solidified emulsion runs down from the walls with or without the help of warming means and/or directing streams of gas, to collect and solidify.

3,797,552

MULTIPLE EFFECT EVAPORATORS

Kurt F. Frank, Pomona; David D. Kays, Claremont, and John W. Kruse, Jr., La Canada, all of Calif., assignors to Aerojet General Corporation, El Monte, Calif.

Continuation of Ser. No. 10,231, Feb. 10, 1970, abandoned.
This application Oct. 24, 1972, Ser. No. 299,933
Int. Cl. B01d *1/26, 3/02*
U.S. Cl. 159—17 C 12 Claims



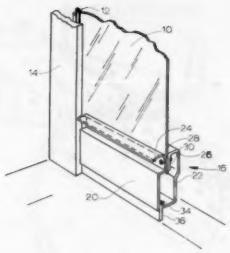
A multiple effect evaporator according to the present disclosure comprises a housing divided into a plurality of evaporator effects each effect having a bundle of heat transfer tubes disposed therein. The bundles are arranged so that the vapor flow is transverse or normal to the axis of the housing and in opposite directions in adjacent effects. Preferably, the bundles are arranged in such a configuration, e.g. a trapezoid, that the area of vapor flow in the bundles decreases in the direction of vapor flow. In one embodiment of the evaporator of the invention the tube bundles of adjacent effects are aligned along a central longitudinal portion of the shell and together form a substantially continuous bank of tubes with the tube bundle bank being interrupted by traversely-located baffles which baffles provide walls between the respective tube bundles of adjacent effects.

3,797,553

SELECTIVE POSITIONING MEANS FOR CURTAIN ASSEMBLY

Phillip Mitchell Elliott, 411 N. 7th St., St. Louis, Mo.

Filed July 17, 1972, Ser. No. 272,227
Int. Cl. E06b *9/08, 9/17*
U.S. Cl. 160—267 3 Claims



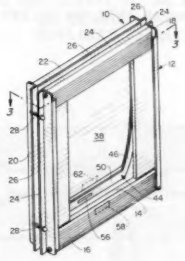
A selective positioning means for a curtain assembly is disclosed as having a one-piece curtain element which is mounted on a spring-biased shaft and a rigid bar associated withthe curtain element wherein the selected positioning means is associated with the rigid bar and is arranged to overcome the spring-biased shaft in the selected positioning of the free end of the curtain element at desired locations.

3,797,554

PET DOOR STRUCTURE

Frances H. Johnson, P.O. Box 643, Northridge, Calif.

Filed June 9, 1972, Ser. No. 261,193
Int. Cl. E06b *3/80*
U.S. Cl. 160—354 5 Claims



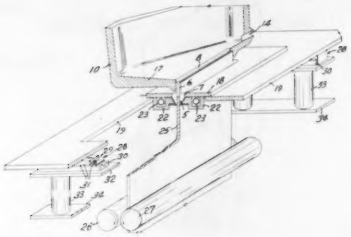
A pet door structure having an open frame to which is swingingly secured a door, the upper edge of the frame comprising an elongated element which is cane shaped in cross-section, the free end of the cane shaped element extending toward the interior of said frame, a first connection means located between the door and the frame adjacent the upper surface of the door permitting such to swing loose in either direction with respect to the frame, a substantially U-shaped border element attached to the elongated element by a second connecting means, the border element to swing only in one direction along with the door and remain in contact with the frame during swinging movement of the door in the opposite direction.

3,797,555

METHOD FOR CONTINUOUS CASTING OF METAL STRIPS

Christopher John English, Hudson, Quebec, Canada, assignor to Noranda Mines Limited, Toronto, Ontario, Canada

Filed Dec. 14, 1971, Ser. No. 207,843
Claims priority, application Canada, Sept. 30, 1971, 124136
Int. Cl. B22d 11/12
U.S. Cl. 164—89 15 Claims



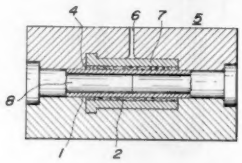
There is provided a method and an apparatus for continuous casting of metal strip. According to this new system, molten metal is introduced into a tundish which has at its bottom a downwardly projecting open ended graphite mould which is directly connected with the tundish. The tundish is preheated to maintain the molten metal at a desired temperature and the molten metal is allowed to flow from the tundish into the mould at a controlled rate. Cooling water is directly applied onto the lateral walls of the mould so as to solidify the metal therein and then it impinges directly onto the metal strip emerging from the mould. An intermittent withdrawing mechanism is used to withdraw the metal strip at speeds of up to and in excess of 30 in./min.

3,797,556

METHODS OF PRODUCING ACCURATE BORE SURFACES

Tameichi Imagawa, No. 8564-Choma Sakuragi-Cho, Ohmiya, and Kaname Kitsuda, No. 28-47 Matsukaze-Cho, Hiratsuka, both of Japan

Filed Oct. 18, 1972, Ser. No. 298,775
Int. Cl. B22d 19/08
U.S. Cl. 164—95 2 Claims



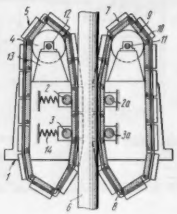
A method of producing a hard, thermal- and wear-resistant bore surface in the inner periphery of a cylinder made of metals, for example, aluminum or its alloy by means of a spray coated layer applied to an accurately finished surface of a hollow cylindrical support member. The spray coated layer applied to the hollow cylindrical support member is used as a hollow mold core. This hollow mold core is incorporated into a casting mold so as to form mold cavity into which is poured molten aluminum or its alloy. The hollow cylindrical support member is removed from the casting to expose the inner surface of the spray coated layer. The exposed inner surface of the spray coated layer is transplanted from the hollow cylindrical support member to the casting and defines an accurate bore surface.

3,797,557

DEVICE FOR INGOT WITHDRAWAL FROM MOULD DURING CONTINUOUS CASTING OF METALS

Aron Yakovlevich Tseitlin, ulitsa Volkova, 5, kv. 66; Sergei Sergeevich Tikhonov, ulitsa Metallurgov, la, kv. 6; Oleg Viktorovich Martynov, ulitsa Pervomaiskaya, 2, kv. 31; Mikhail Nikolaevich Makarov, ulitsa Metallurgov, 35/7, kv. 7; Vladimir Nikolaevich Ordinartsev, ulitsa Stoletova, 5, kv. 1; Jury Nikolaevich Ordinartsev, ulitsa Bunkernaya, 20; Semen Maximovich Gorlov, ulitsa Kutuzova, 106a, kv. 28; Vladimir Alexeevich Bashkov, ulitsa Bardina, 3, and Anatoly Georgievich Sitnov, ulitsa Metallurgov, 80a, kv. 42, all of Tula, U.S.S.R.

Filed Feb. 10, 1972, Ser. No. 225,135
Int. Cl. B22d 11/12
U.S. Cl. 164—282 7 Claims



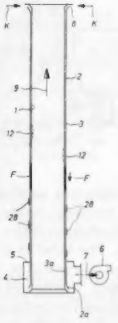
In the continuous casting of metals, secured on the pulling members of endless chains which serve to withdraw an ingot from a mould are shaped insert pieces which are in direct contact with the ingot. These shaped pieces make it possible to withdraw the ingot without distorting its profile.

3,797,558

METALLIC RECUPERATOR AND METHOD OF OPERATING SAME

Heinz Jacobs, Geldern, Germany, assignor to Kleinewefers Industrie-Companie GmbH, Krefeld, Germany

Filed Jan. 26, 1972, Ser. No. 220,835
Claims priority, application Germany, Feb. 1, 1971, 2104532
Int. Cl. F23l 15/04
U.S. Cl. 165—1 6 Claims



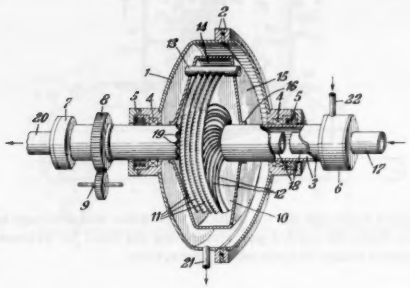
A metallic recuperator structure comprising one or more recuperators each comprising an annular chamber defined by an inner cylinder and an outer cylinder surrounding the inner cylinder, a heat absorbing medium being forcibly drawn through the annular chamber while the heating medium passes through the inner cylinder.

3,797,559

ROTARY HEAT EXCHANGER AND APPARATUS

Richard S. Paul, Grand Island, and David W. Weiler, Lancaster, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 31, 1969, Ser. No. 849,251
Int. Cl. F28b 1/04
U.S. Cl. 165—1 4 Claims



The invention described herein may be manufactured and used by or for the Government for governmental purposes without payment of any royalty thereon.

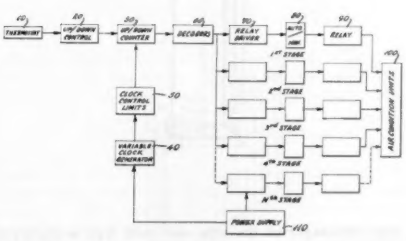
Heat transfer to a condensing vapor is conducted in a rotating exchanger comprising a tightly-nested array of involute-shaped passages coated internally with a thin porous layer of bonded metal particles.

3,797,560

CONTROL SYSTEM FOR ENVIRONMENTAL CONDITIONING UNITS

Isaac Zaharoni, 3109 Oakhurst Ave., Los Angeles, Calif.

Filed June 21, 1972, Ser. No. 264,821
Int. Cl. F25h 29/00
U.S. Cl. 165—26 18 Claims



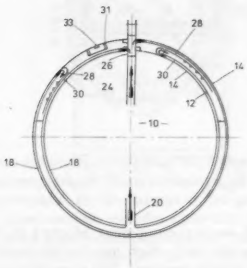
A solid state environmental control system which approximates the temperature demand curve by sequentially activating a plurality of environmental conditioning units at a given time interval while the demand exists and sequentially deactivating said units in reverse order upon cessation of said demand or upon a temperature demand of the opposite magnitude. An up-down counter controlled by solid state logic in response to temperature demands activates and deactivates the appropriate environmental unit in conjunction with a solid state logic decoder.

3,797,561

OIL TANKS AND COOLERS

Kenneth William Clark, and Clifford Stanley Woodward, both of Bristol, England, assignors to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England

Filed Sept. 20, 1971, Ser. No. 182,090
Claims priority, application Great Britain, Oct. 2, 1970, 46925/70
Int. Cl. G05d 23/00
U.S. Cl. 165—37 9 Claims



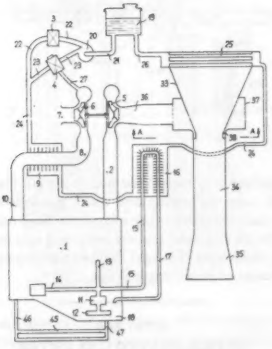
A ducted fan gas turbine engine has a flow splitter in the fan duct which is hollow to define an oil tank, and is double-walled to define a passage between the external wall of the oil tank and an outer wall. Hot oil is directed along the passage and the external surface of the flow splitter acts as a surface cooler in the relatively cool fan air flow. Direct communication is provided between the oil cooler passage and the interior of the tank thus minimising exterior pipework.

3,797,562

COOLING SYSTEMS OF SUPERCHARGED DIESEL ENGINES

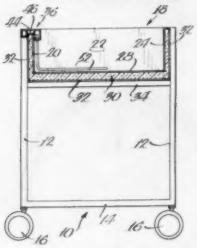
Maurice G. Brille, Suresnes, and Yves E. Baguelin, Billancourt, both of France, assignors to Societe Anonyme De Vehicules Industriels Et D'Equipements Mecaniques Saviem, Suresnes (Hauts de Seine), France

Filed Apr. 26, 1971, Ser. No. 137,318
Int. Cl. B60h 1/00
U.S. Cl. 165—39 4 Claims



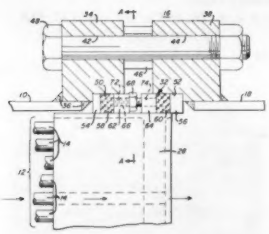
This invention applicable notably to supercharged Diesel engines consists essentially in utilizing the engine exhaust gas having already worked in the turbine of the supercharging turbo-compressor for inducing in a pump the air necessary more particularly for partially cooling the lubricating oil and the engine supercharging air.

3,797,563
PORTABLE FOOD SERVICE EQUIPMENT
Carter Clifford Hoffmann, Lake Forest, and Richard R. Berger, Antioch, both of Ill., assignors to Carter-Hoffmann Corp., Mundelein, Ill.
Filed Nov. 18, 1971, Ser. No. 200,133
Int. Cl. F25b *29/00*
U.S. Cl. 165—48 **5 Claims**



Portable food service equipment adapted to be used in cafeterias or the like and which may be alternately used for food heating or cooling purposes. The exemplary embodiment includes a wheeled cart mounting an open topped container adapted to receive food. The container includes mounting means for alternately mounting electrical heating elements or the cooling coils of a refrigerating unit. The refrigerating unit is designed so that a portable compressor portion thereof may be supported by the cart wholly within the confines of the cart.

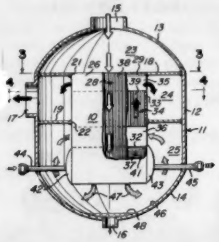
3,797,564
ADJUSTABLE SOFT PACKING SEAL
Harry C. Dickinson, 3137 Cleveland Ave., Michigan City, Ind.
Filed Apr. 17, 1972, Ser. No. 244,635
Int. Cl. F28f *7/00*
U.S. Cl. 165—82 **4 Claims**



A soft packing seal means for use in a rigid flange connection in fluid carrying piping and more particularly to piping having internal tubing carrying a separate fluid other than that carried in the piping, said seal means being externally adjustable without disturbing the rigid flange connection and providing visual means of detecting leakage.

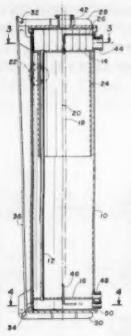
3,797,565
REFRIGERATED GAS DRYER
Joseph F. Fernandes, Centerville, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Nov. 22, 1971, Ser. No. 200,947
Int. Cl. F28b *1/00, 9/00*
U.S. Cl. 165—111 **12 Claims**

A refrigerated air or like dryer in which apparatus to perform the several functions of such a dryer are combined in a unit of small, compact size. A heat exchange device is uniquely constructed to perform both the principal cooling and the precool-reheat functions. A housing in an enclosing relation to



the heat exchange device induces separation and drainage of liquid from the cooled gas, eliminating the need for external separator means and attendant connections.

3,797,566
HEAT EXCHANGER
Paul Credoz, Denain; Jacques de Cremoux, Douchy Les Mines, and Jacques Gaffet, Denain, all of France, assignors to Fives Lille Cail, Paris, France
Filed Apr. 13, 1973, Ser. No. 350,692
Int. Cl. F28b *9/10*
U.S. Cl. 165—114 **4 Claims**



A heat exchanger of the tube-and-shell type is equipped with a tube bundle eccentric relative to the upright axis of the shell. The upper part of the tube bundle is enveloped by a cylindrical, coaxial skirt depending from the fixed, upper tube sheet. Steam is admitted to the widest portion of the crescent-shaped, annular space between the shell and the skirt and deflected to ward the lower ends of the tubes. The non-condensable gases are vented near the axis of the bundle. Partitions in the liquid chambers or heads cause the liquid to be heated to flow downward in the tube nearest the common axis of the bundle and skirt and thereafter alternatingly upward and downward in tubes gradually more remote from the axis of the bundle.

3,797,567

CONTINUOUS STERILIZING APPARATUS

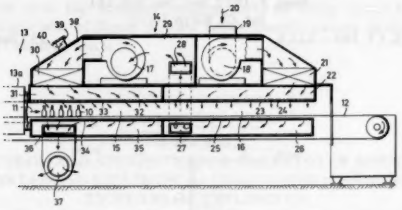
Gunter Wolf, Karlsruhe-Waldstadt, and Wilfried Willing, Sinnersdorf, both of Germany, assignors to H. Strunck & Co. Maschinenfabrick, Cologne-Ehrenfeld, Germany

Filed Feb. 29, 1972, Ser. No. 230,363

Claims priority, application Germany, Mar. 15, 1971, 2112375

Int. Cl. F24h 3/02

U.S. Cl. 165—120 7 Claims



An apparatus for sterilizing objects along a continuous transport means by using heat stations, and a plurality of cooling stations applying sterilized air to the objects, whereby the cooling stations are separated into more than one cooling zone in the direction of movement of the objects and each zone has an individual supply line for the cool air, whereby the cooling temperature is reduced from zone to zone in the direction of movement of the objects in order to eliminate thermal stresses from occurring in the material of the objects.

3,797,568

RADIATOR

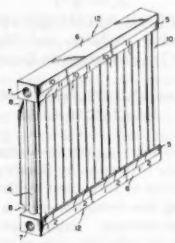
Alfred Kormann, Bucher Strasse 2, 8011 Eglharting near Munich, Germany

Filed Aug. 16, 1971, Ser. No. 172,014

Claims priority, application Germany, Aug. 14, 1970, 2040590

Int. Cl. F24h 3/00

U.S. Cl. 165—131 3 Claims



A radiator has a plurality of vertical pipes with longitudinally co-extensive radiating surface extensions. The extensions are generally T-shaped in cross-section with the base of the T being joined to the pipe. Extensions are joined at opposite sides of an oval pipe. The pipes are joined by headers, and the resulting radiator has a rectangular shape with a plurality of spaced vertical rectangular members.

3,797,569

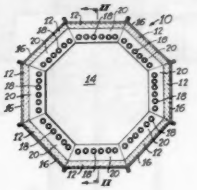
CAGE TYPE RADIATION RECUPERATOR

Siegfried R. Meder, Pittsburgh, and Thomas E. Dixon, Allison Park, both of Pa., assignors to The American Schack Company, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1973, Ser. No. 345,872

Int. Cl. F28f 3/12

U.S. Cl. 165—169 6 Claims



A cage type radiation recuperator has a plurality of preconstructed, interengageable, congruent panel sections that form a closed flue chamber for the passage of flue gas therethrough. Each of the panel sections includes a plurality of conduits supported in spaced parallel relation adjacent the panel sections by brackets mounted transversely on the panels. Hot flue gas from a combustion furnace enters the flue chamber and radiantly transfers energy to the cold air circulating through the conduits. The cold air supplied by an air inlet duct and heated by the flue gas passes the length of the flue chamber through the conduits into an air outlet duct where the air is delivered for subsequent use at an elevated temperature. The waste flue gas is then discharged from the flue chamber through an outlet duct connected thereto.

3,797,570

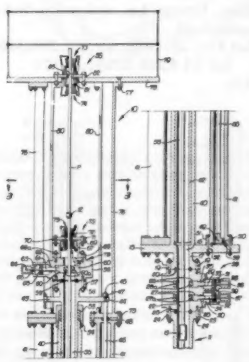
SNUBBING APPARATUS

Kurt Leutwyler, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed May 8, 1972, Ser. No. 251,211

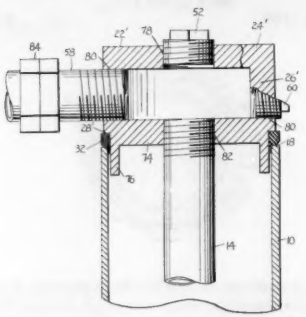
Int. Cl. E21b 41/00

U.S. Cl. 166—77 8 Claims



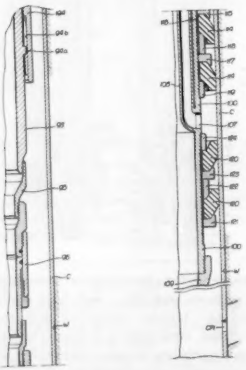
Snubbing apparatus for elevating and lowering an elongated tubular structure from and into a well bore while maintaining a seal between the tubular structure and the well head, wherein the tubular structure is releaseably engageable by traveling slip and traveling blowout preventer devices and by stationary slip and stationary blowout preventer devices, alternately, to elevate and lower the tubular structure, without causing movement of the tubular structure through the closed stationary blowout preventer device.

3,797,571
PUMP SUPPORT ADAPTER
James H. Hamar, 8336 S.W. 23rd St., Portland, Oreg.
Filed Mar. 20, 1972, Ser. No. 236,367
Int. Cl. E21b *33/03*
U.S. Cl. 166—88 **5 Claims**



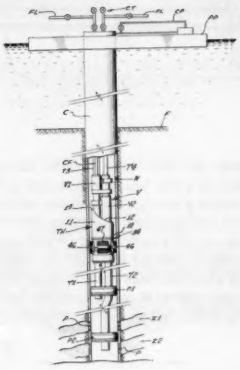
A pump support adapter including a housing enclosed at its top and sides but open at the bottom and arranged to seat on the top edge of a well casing for supporting a vertical well pipe and pump hanging in the casing. The housing has a gasket on its lower edge to provide sealing engagement with the well casing and contains a connector portion having bottom open inlet means arranged to be connected to a vertical well pipe. The connector portion also includes one or more laterally extending outlet means in communication with the inlet means. These outlet means are arranged to be connected to discharge pipes. The housing has attaching means on its upper side arranged to be connected to lift mechanism for raising and lowering the housing in the well casing. The housing also includes a vent for venting the well and a fitting for receiving electrical lines.

3,797,572
APPARATUS FOR SELECTIVE FORMATION TREATMENT
Henry X. Mignotte, Gretna, La., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Filed Aug. 28, 1972, Ser. No. 284,340
Int. Cl. E21b *23/06, 33/124*
U.S. Cl. 166—127 **20 Claims**



A selective formation treatment tool has a retrievable packer adapted to be set in a well casing above perforations in the casing, and a washing or treating fluid tool has opposed packers for progressively isolating the vertically spaced individual perforated casing sections as the washing or treating tool is progressively moved upwardly to confine the flow of fluid from the tool into the formation through the successive perforations.

3,797,573
FULL OPENING SAFETY VALVE
Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Division of Ser. No. 243,806, April 13, 1972. This application Sept. 5, 1972, Ser. No. 286,151
Int. Cl. E21b *33/10*
U.S. Cl. 166—224 S **25 Claims**



A full opening single or dual safety valve for wells, in which each valve assembly has a rotary ball valve having a flow passage as large as the flow passage through the valve body. The ball valve is installed in the body through a side window which is closed by a member which cooperates with the ball valve to move the latter between open and closed positions. The dual safety valve has releasable latch means for holding the safety valve in a receptacle of a tubing hanger which supports producing tubing strings in the well.

3,797,574
MISCIBLE OIL RECOVERY PROCESS
David G. Feuerbacher, Bellaire, and Mary K. H. Smith, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Oct. 27, 1972, Ser. No. 301,542
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **11 Claims**

A process for recovering petroleum from a subterranean petroleum containing formation by flooding with a surfactant wherein the adsorption of surfactant by the formation rock is inhibited by treating the formation with a preflush slug of a water soluble quaternary ammonium salt such as tetramethylammonium chloride prior to injecting the surfactant. Preferably, treatment is accomplished by injecting an aqueous solution of water soluble quaternary ammonium salt into the formation in an amount sufficient to satisfy substantially all of the adsorption capacity of the formation matrix followed by injection of an aqueous solution of the surfactant into the formation. The quaternary ammonium salt and the surfactant solution can be subsequently displaced through the formation by any convenient aqueous drive fluid including water.

3,797,575

ADDITIVES FOR TEMPORARILY PLUGGING PORTIONS OF SUBTERRANEAN FORMATIONS AND METHODS OF USING THE SAME

Walter R. Dill; Jiten Chatterji, and John A. Knox, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed June 19, 1972, Ser. No. 264,117
Int. Cl. E21b 33/138, 43/27
U.S. Cl. 166—282 14 Claims

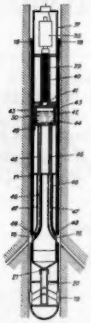
The present invention relates to additives for forming fluid loss or diverting agents in aqueous treating fluids used in the treatment of subterranean formations. The additives are combined with the aqueous treating fluid to bring about the precipitation of finely divided solids therein having desired size characteristics.

3,797,576

METHOD AND APPARATUS FOR BREAKING UP ROCKS CONTAINING LIQUID OR GASEOUS HYDROCARBONS BY MEANS OF EXPLOSIVES

Jean Paul Azalbert, Ablon-sur-Seine, and Adrien Giraud, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed May 21, 1971, Ser. No. 145,666
Int. Cl. E21b 43/00
U.S. Cl. 166—299 7 Claims



Oblique holes are drilled into a formation from a well bore hole, packed with explosive charges, and simultaneously detonated. The holes are drilled at the same level and angle with respect to the bore hole, and are evenly spaced around its periphery. An implementing apparatus includes a tool carrier that is lowered into the bore hole and anchored in place, a flexible shaft drilling tool that is lowered into the carrier, and a packing tool for placing the charges.

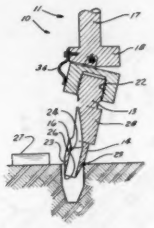
3,797,577

TURF PERFORATING TOOL

Marvin L. Killion, 510 Pontiac Dr., Gretna, Nebr., and Richard R. Williams, Ithaca, Nebr.

Filed June 13, 1972, Ser. No. 262,330
Int. Cl. A01b 45/02
U.S. Cl. 172—22 10 Claims

A turf perforating tool for use with conventional turf perforating equipment, the tool having a hinge plate secured to a reciprocating shaft, a hinge mechanism interconnecting the plate to a cap, and a cutting element having a core passage formed therein and threadably secured to the cap, wherein the cutting element is substantially vertically disposed during the core cutting process but will pivot slightly during the core removing process thus substantially preventing the compaction of soil around the hole formed by the tool.

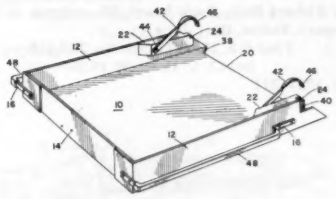


3,797,578

PLUG CATCHER FOR GREEN AERATOR

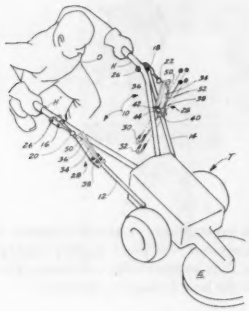
Alfredo Velasquez, 9038 Gorge Ave., Santee, Calif.

Filed May 1, 1972, Ser. No. 249,185
Int. Cl. A01b 45/02
U.S. Cl. 172—22 1 Claim



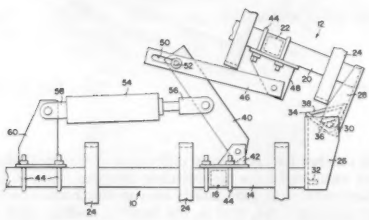
A plug catcher for temporary collection of the small plugs of turf as extracted by a turf-aerating machine, the catcher being characterized as particularly easy to attach and remove from the gleaning edge, that is, the front or leading edge, of the catcher only a small fraction of an inch from the ground, this distance being regulated effectively by locating this edge closely adjacent to the ground contact points of the rear supporting wheels of the aerator machine. The catcher is essentially a platform and is illustrated as having a wall making the same box-like and it is substantially balanced upon ground-contacting casters with the front end releasibly latched onto the axle of the aerator and dimensioned to extend below the axle, immediately to the rear of the aerator's plug extractors, so that the aforementioned gleaning edge brushes the grass of the fairway turf, being positively held in this turf-engaging position, to sweep the extracted plugs into the box-like enclosure of the catcher. Handling the aerator and catcher is ordinarily a two-man job and two axle-engaging latch hooks, one at each side, are provided for attaching and handling the catcher, which when loaded with extracted turf plugs is lifted from the aerator machine and ordinarily emptied into a truck or cart.

3,797,579
MOVING-IMPLEMENT CONTROL-GUARD SYSTEM
George H. Bilger, Monkton Rd., Monkton, Md.
Filed Aug. 2, 1972, Ser. No. 277,063
Int. Cl. A01b *33/00*; A01d *35/12*; G05g *1/00*
U.S. Cl. 172—42 5 Claims



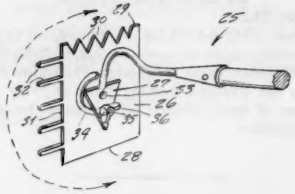
A moving-shield system for implement controls including a pushrod-mounted inclined deflector fin having an angle causing it to overhang and follow the movements of a pushrod control lever.

3,797,580
FOLDABLE AGRICULTURAL IMPLEMENT
Robert Richard Roth, Rock Island, Ill., assignor to Deere & Company, Moline, Ill.
Filed Feb. 28, 1972, Ser. No. 229,668
Int. Cl. A 1b *49/00*, *19/04*
U.S. Cl. 172—311 7 Claims



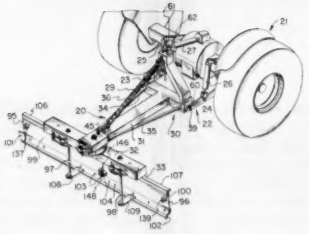
A wheeled spring tooth harrow has pivoted wing frames, each of which is movable between operating and transport positions by a hydraulic wing fold mechanism which folds the wings through 155° or more from a position in alignment with the main frame. The wing fold mechanism includes a pair of links having a lost-motion connection which, as the wing is being folded to the transport position, permits the wing to free-fall from a balanced position at approximately 110° closed through approximately 15° and, as the wing is being opened to an operating position, permits the wing to free-fall from the balanced position through approximately 20°. When the wing is in the operating position, the lost-motion connection permits the wing to float through approximately 35° to follow ground contour.

3,797,581
GARDENER'S HELPERS CUTTING HOE
Robert E. Holloway, c/o George Specter, 3615 Woolworth Building, 233 Broadway, New York, N.Y.
Filed Apr. 14, 1972, Ser. No. 244,074
Int. Cl. A01b *1/00*
U.S. Cl. 172—372 1 Claim



An agricultural hand implement for hoeing a ground, the device incorporating a flat blade attached at right angle to a socket receivable on the end of an elongated handle and the blade leading edge being toothed so to effectively cut down weeds.

3,797,582
BACK FILL ATTACHMENT FOR A DRAFT VEHICLE
James L. Couch, Route 3, Box 169, Ocean Springs, Miss.
Filed Oct. 30, 1972, Ser. No. 301,764
Int. Cl. A01b *59/043*
U.S. Cl. 172—451 23 Claims

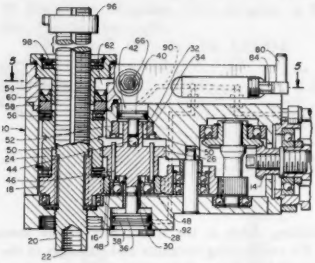


A back fill attachment is provided for a draft vehicle. The attachment is especially useful to back fill soil removed from trenches in the laying of gas lines, water lines, electric lines and other conduits. The attachment also may be used to back fill soil removed from excavations made for general construction purposes, and to level or contour soil in land filling or landscaping operations. In one preferred embodiment, the attachment comprises an adjustable back fill blade which is adapted to be attached to a tractor having a three point hitch. The blade may be adjusted in a number of positions and the attachment is sufficiently versatile to meet a variety of different back filling, leveling, and contouring requirements.

3,797,583
POSITIVE FEEDING STRUCTURE FOR TOOLS INCORPORATING PRESSURE CONTROLLED FEED MEMBER
Robert C. Quackenbush, Glendale, Calif., assignor to Arthur B. Quackenbush, Glendale, Calif., a part interest
Filed Nov. 24, 1972, Ser. No. 309,147
Int. Cl. B23b *47/24*
U.S. Cl. 173—4 12 Claims

A feed member telescopes and is threadably engaged with a rotatably driven spindle arranged for moving the spindle axi-

ally in a feed stroke upon the feed member rotating faster than the spindle and in a retraction stroke upon the feed member remaining stationary. The feed member is also arranged axially movable along the spindle a limited distance between first and second positions controlled for remaining stationary in the first position and rotating faster then the spindle to, at and from the second position. A fluid actuated piston reacts against the feed member controlled to urge the feed member



axially toward and normally retain the same in the second position at the commencement and during the spindle feed stroke, the feed member causing the spindle feed stroke upon reaching the second positon and causing the retraction stroke upon the return to the first position so that when the spindle in the feed stroke meets resistance against spindle axial movement overcoming the action of the fluid piston, the feed member returns from second to first position for start of the retraction stroke.

3,797,584

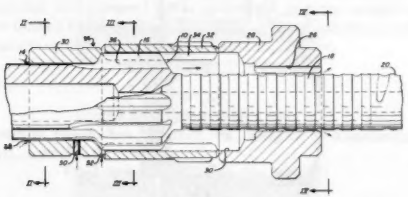
STRIKING BAR

Edward A. Bailey, R.F.D. No. 2, Box 37, Newport, N.H., and James F. Ordway, 10 Floyd Ave., West Lebanon, N.H.

Filed Mar. 31, 1972, Ser. No. 240,170

Int. Cl. E21b *1/00*; **B25d** *17/20*

U.S. Cl. 173—105 **12 Claims**



A striking bar of a type utilized in a percussive tool such as a hammer rock drill, and more particularly a striking bar assembly having improved passageway means therein for providing lubricating fluid intermediate the striking bar and the encompassing supporting bushings.

3,797,585

APPARATUS FOR GENERATING A PRESSURE WAVE IN AN ELONGATED BODY OPERATIVELY CONNECTED TO A DROP HAMMER

Berger Ludvigson, Sadra Vagen 38, 412 54 Goteborg, Sweden

Filed Oct. 18, 1972, Ser. No. 298,494

Claims priority, application Sweden, Oct. 18, 1971, 13134/71

Int. Cl. B25d *9/00*; **E21b** *11/02*; **A47c** *27/08*

U.S. Cl. 173—131 **9 Claims**

When driving piles into the ground the drop hammer should act upon the head of the pile through the intermediation of an elastically deformable cap. The resistance of the ground will vary from one occasion to the other and will furthermore often vary during the driving of an individual pile. This makes it desirable to change the elastic properties of the cap, which

to that end is designed to enclose a body of gas and a body of liquid, means being provided for adjusting the volume and the pressure of the gas by governing the flow of liquid from one chamber to another within the cap.

3,797,586

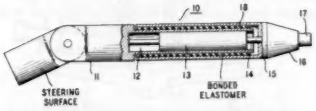
MOLE WITH DECOUPLED NOSE AND BODY

James Christopher Coyne, New Providence; Robert Gordon McCoy, Whippany, and Arnold Ray Smith, Chester, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,814

Int. Cl. E21b *1/06*

U.S. Cl. 173—133 **2 Claims**



The penetrating forward nose of a Mole is structurally decoupled from the body in this invention to reduce fatigue and shock effects on the body. The nose and body are connected through a compliant sleeve in one embodiment. In a second, the nose is slidably mounted on the body outer shell, and subanvil means are interposed between the hammer and nose.

3,797,587

SLEEVE CYLINDER POWERED DRILLING MACHINE

Harold T. Klein, Bellevue, Wash., assignor to The Robbins Company, Seattle, Wash.

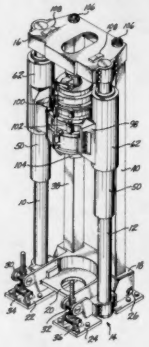
Filed Jan. 3, 1972, Ser. No. 214,813

Int. Cl. E21c *5/11*

U.S. Cl. 173—152 **13 Claims**

Rotary drilling equipment mounted on a traveling frame is moved up and down along a guide column by means of a first cylinder which surrounds and travels along the guide column

and a second cylinder which surrounds and travels along the first cylinder. The guide column means is interconnected



between a head frame and a base frame. The guide column means, the head frame and the base frame all together form a rigid closed box frame structure.

3,797,588

ICE DRILL WITH ADJUSTABLE CUTTING EDGES

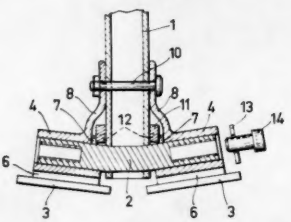
Arvid Jonsson; Jonas Erland Jonsson, and Per August Malmen, all of Malung, Sweden, assignors to AB Arjon, Malung, Sweden

Filed Apr. 25, 1972, Ser. No. 247,366

Claims priority, application Sweden, Apr. 28, 1971, 5482/71

Int. Cl. F25c *5/04*

U.S. Cl. 175—18 **13 Claims**



An ice drill mounts a pair of cutters on a pair of sockets rotatably supported on a bar connected transversely to the end of a drill shaft. The angular orientation of the sockets, and hence the cutters, on the bar may be adjusted by rotating an adjustment member which engages a notch on each socket. Rotation of the adjustment member causes rotation of the sockets in opposite directions but with equal angular displacement thereby maintaining equal cutting angles for the two cutters.

3,797,589

SELF GUIDING FORCE APPLICATOR

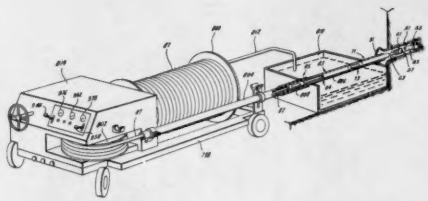
Jackson M. Kellner, and George Abraitys Alther, both of Midland, Tex., assignors to Smith International, Inc., Midland, Mich.

Continuation of Ser. No. 189,845, Oct. 18, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,628

Int. Cl. E21b *3/12, 19/08;* **E21c** *9/00*

U.S. Cl. 175—94 **18 Claims**

A self guiding force applicator includes a tubular mandrel to deliver fluid to drilling means. A piston carried by the mandrel moves in a cylinder to which fluid is supplied to force mandrel or cylinder in or out. The mandrel and cylinder are connected by spline means to prevent relative rotation while allowing relative axial motion. Releasable anchor means anchors either cylinder or mandrel to wall of bore hole dependent upon whether mandrel or cylinder is to be moved. The mandrel anchor means is disposed at the outer end of the force applicator to serve as a guide means when in the released position



during drilling. Also at the outer end of the mandrel is a manifold for connecting conduits and passages in the mandrel to an outer end of the force applicator. The hose line is wound on an out-of-hole winch mounted on a trailer cart. Launching means for the force applicator and drilling means, together with supply and control means for the anchor means, piston and cylinder means, and the drilling means, is also mounted on the car.

3,797,590

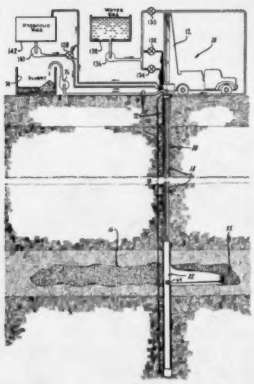
UNDERGROUND MINING SYSTEM

William R. Archibald, San Anselmo, and John J. Gilbert, San Francisco, both of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Filed Jan. 16, 1973, Ser. No. 324,168

Int. Cl. E21c *45/00*

U.S. Cl. 175—213 **6 Claims**



Hydraulic underground mining system adapted to operate through a small diameter well bore and into a subterranean body and including a mining capsule carried on the lower end of an elongate support structure. The mining capsule includes a liquid jet nozzle at its upper end for forming a laterally directed jet stream to impact material in the ore body and to pulp the same into a slurry. An orifice having a grate for preventing entry of excessively large material is positioned below the jet so that freshly pulped slurry flows into the orifice, the latter being connected to an elongate positive displacement pump mounted below the orifice. Suitable hydrau-

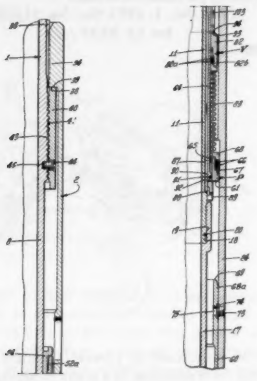
lic power means are provided for operating the pump and for progressively moving the jet stream to at least a portion of an arc. Fixed liquid jets are also provided at the pump inlet for flushing and priming and to the lowermost portion of the capsule and to facilitate movement of the apparatus in the well bore.

3,797,591

TRIGGER MECHANISM FOR DOWN-HOLE ADJUSTABLE HYDRAULIC FISHING JAR

William O. Berryman, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Feb. 6, 1973, Ser. No. 330,034
Int. Cl. E21b *1/06, 1/10*
U.S. Cl. 175—296 **23 Claims**



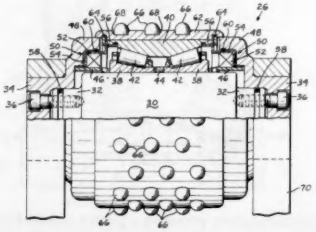
A down-hole adjustable hydraulic fishing jar for removing stuck objects from a well bore in which hydraulic fluid within a compression chamber by-passes a compression piston through an unrestricted flow passage normally closed by a valve. The valve is instantaneously opened by a trigger mechanism adjustable down-hole to vary the tension on the running-in string required to trigger the valve to the open position. The jar is operative repetitively in any selected adjusted condition. An adjusting rig is assembled with the trigger to have limited freedom of rotation during jarring operations and to rotatively drive the trigger to enable adjustment.

3,797,592

STABILIZING ROLLER

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Nov. 21, 1972, Ser. No. 308,411
Int. Cl. E21b *17/10*
U.S. Cl. 175—325 **7 Claims**



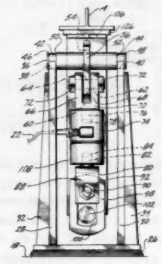
A stabilizing roller, especially for a raise boring head, in which an outer sleeve having cemented hard metal carbide elements inserted therein is mounted by an anti-friction bearing arrangement on a massive central shaft. The stabilizing roller is adapted for being disposed vertically at the periphery of a raise boring head for guiding the head during cutting operations.

3,797,593

HEAVY DUTY INDUSTRIAL SCALE

Fred Miller Conley, Highland, Calif., assignor to Dudley & Conley Scale Co., Inc., Colton, Calif.

Filed Dec. 14, 1972, Ser. No. 315,214
Int. Cl. G01g *19/02*
U.S. Cl. 177—134 **10 Claims**



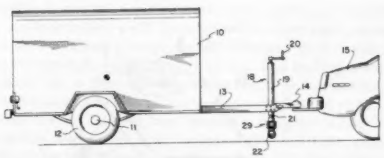
A weighbridge of a heavy duty industrial scale is supported by mounts which indicate applied load by a transducer which is loaded in pure tension. Each mount has a girder chair for supporting an I-beam. A pair of parallel arms extend from this girder chair downwardly to a first cross pin. The cross pin is force coupled to a link which in turn is force coupled to a clevis above the pin through a clevis pin. The pin coupling to the link and the link coupling to the clevis allows free rotational movement of each part with respect to the other. The clevis is tension coupled to the bottom of a load transducer. A similar series linkage is provided between the transducer and ground to complete force transmission to ground, except that this linkage is orthogonal to the first described linkage.

3,797,594

TRAILER TONGUE WEIGHT SCALE

James L. Chaffee, 4308 San Bernardino Ave., Las Vegas, Nev.

Filed July 20, 1973, Ser. No. 381,115
Int. Cl. G01g *19/08, 5/04*
U.S. Cl. 177—136 **4 Claims**



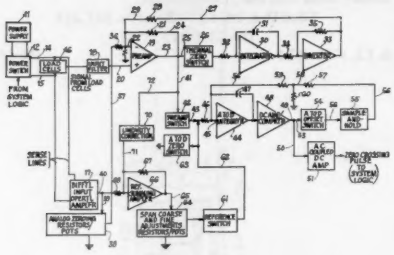
Apparatus carried by the tongue of a trailer to indicate the tongue weight load and thereby assist in distributing the weight of the cargo during the loading of the trailer to provide optimum conditions for the trailer and the propelling vehicle.

3,797,595

SYSTEM FOR DIGITAL WEIGHING WITH ZEROIZING FOR THERMAL EFFECTS

Chieh-Kung Yin, Grayslake; Roy W. Klein, Hoffman Estates, and Bernard A. Johnson, Deerfield, all of Ill., assignors to Mangood Corporation, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,965
Int. Cl. G01g 23/14, 3/14
U.S. Cl. 177—164 14 Claims



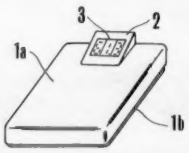
A system for digital weighing, by utilizing an analog voltage of load cells representative of the weight of a load to be weighed, includes an analog-to-digital converter with a preamplifier and an integrator, a switch to connect the load cells to a power supply, means to turn off and on the switch, means to generate and store a signal based at least in part on the thermal voltage output of the load cells when the switch is off, and means to utilize that signal during the use of the analog-to-digital converter in a subsequent weighing operation when the switch is on. Preferably the system uses an analog-to-digital converter having a switch to couple the preamplifier to the integrator for a period of time and a switch to couple thereafter a reference voltage to the integrator during operation of the conversion. While these three switches are off, another switch is on. It couples the output of the preamplifier to a compensating circuit with a feedback to the preamplifier of opposite polarity voltage compensating for the thermal voltage of the load cells and the offset voltage and current of the preamplifier. The switch to the compensating circuit is off when the other switches are on.

3,797,596

DIGITAL DISPLAY BODY-WEIGHT METER

Mikiharu Tanji, Watarai-gun, and Masanori Yamagiwa, Ise City, both of Japan, assignors to Ise Electronics Corporation, Ise, Mie Prefecture, Japan

Filed June 28, 1973, Ser. No. 374,334
Claims priority, application Japan, June 30, 1972, 47-77463[U]; June 30, 1972, 47-77464[U]; June 30, 1972, 47-77465[U]; June 30, 1972, 47-77466[U]; June 30, 1972, 47-77467[U]; June 30, 1972, 47-77470[U]
Int. Cl. G01g 3/14
U.S. Cl. 177—210 7 Claims



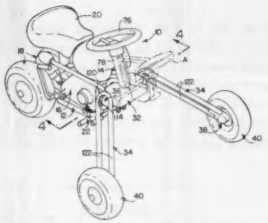
A digital display body-weight meter includes a positioning means to bring a code disc having a logic code arrangement to standstill at the termination of its rotation according to the descent of a footstool such that a detecting means to detect a logic code is located at the center of one of a plurality of logic codes, whereby reliable measurement signal may be obtained from the detecting means. It also includes means to bring the detecting means into contact with the logic code arrangement on the code disc after the termination of the rotation of the disc, whereby wear of brush and conductor can be eliminated and also good contact therebetween and reliable read-out of signal may be ensured.

3,797,597

FOLDING MOTORIZED VEHICLE

S. Albert Young, Birmingham, Mich., assignor to Harold J. Rineman, Southfield and Richard L. Rineman, Brighton, both of, Mich., part interest to each

Filed Dec. 1, 1972, Ser. No. 311,331
Int. Cl. B62d 3/14
U.S. Cl. 180—1 F 21 Claims



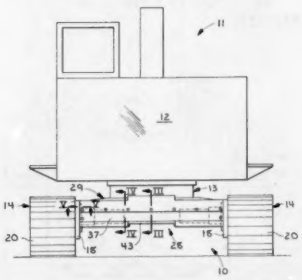
A portable motorized or powered vehicle which is compactly folded for translation in a trunk or storage chamber of a conventional motor vehicle. Compactness of the powered vehicle is achieved by pivoting the front wheel supporting legs simultaneously rearwardly, and swinging the front wheel legs on each side inwardly toward the vehicle frame for securement thereto, so that the wheels assume a tucked-in posture closely adjacent the frame and just forwardly of the rear wheels, the vehicle frame being compactly arranged about the power engine which is positioned substantially medially of the framing structure.

3,797,598

GUARD ASSEMBLY FOR TRACK DRIVE MOTORS

John C. Wanner, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 3, 1972, Ser. No. 240,606
Int. Cl. B62d 21/18, 11/04
U.S. Cl. 180—6.48 14 Claims



A guard assembly comprises separable upper and lower covers detachably mounted on the frame of a track-type vehi-

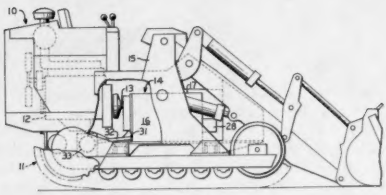
cle to form tunnel portions for shielding and protecting the drive motors and attendant conduits thereof. The lower cover comprises a centrally disposed member having its forward end hingedly mounted on the frame by a pair of hook members to facilitate removal and installation thereof. The rearward end of the member has towline attachment means formed thereon and a shear block arrangement is disposed between the member and the frame to transmit towing forces directly to the frame.

3,797,599

PUMP DRIVE FOR HYDROSTATIC DRIVE LOADERS

James M. Kostas, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 22, 1971, Ser. No. 210,779
Int. Cl. B60k *17/28*
U.S. Cl. 180—53 R **7 Claims**



A vehicle driven by hydrostatic motors includes a removable compartment in an accessible location remote from the vehicle engine which contains swivel disc pumps, and shafts and gears driving the pumps, arranged to be driven by the vehicle engine. The shafts are supported on bearings disposed in pillow blocks for easy removal from the compartment.

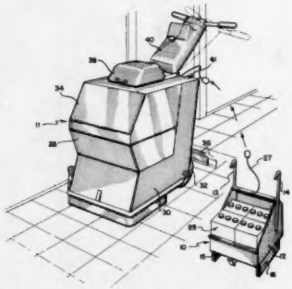
An implement pump is also mounted on the compartment wall to be driven by a common drive shaft with the pumps, allowing the implement pump to utilize maximum engine power when required.

3,797,600

POWER PACK MOUNT

Earl L. Miner, Moran, Kans., assignor to Lawlor Industries, Inc., Addison, Ill.

Filed Apr. 21, 1972, Ser. No. 246,273
Int. Cl. B60k *5/10;* **B60l** *11/02, 11/18*
U.S. Cl. 180—64 M **22 Claims**



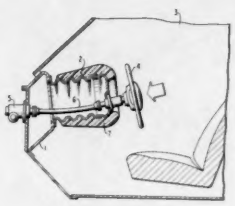
A power pack mount having a generally rectangular-shaped box-like frame with a pair of arms fixedly secured to the opposite sides thereof, in a substantially vertically disposed position. The ends of the arms are adapted to be attached to a pair of rearwardly and downwardly shiftable pivot point attachments on the vehicle in which the power pack mount is installed, whereby the power pack mount can be easily removed from and replaced within the vehicle.

3,797,601

SAFETY STEERING FOR MOTOR VEHICLES

Bela Barenyi, Maichingen, and Hermann Renner, Magstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed May 26, 1972, Ser. No. 257,099
Claims priority, application Germany, May 28, 1971, 2126666; May 28, 1971, 2126668
Int. Cl. B60k *27/00;* **B60r** *19/00;* **B60k** *37/00*
U.S. Cl. 180—78 **27 Claims**



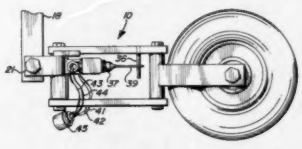
A safety steering arrangement for motor vehicles with a plastically deformable structural part arranged between a steering hand wheel and the front wall of the vehicle; the steering wheel is thereby rotatably supported in the end of the plastically deformable structural part facing the passenger space while the steering movements are transmitted from the hand wheel to a steering gear by way of an intermediate member which is relatively stiff in torsion yet yielding in the deformation direction of the plastically deformable part.

3,797,602

VEHICLE GUIDANCE SYSTEM

Harry H. Sumida, 10717 Antelope Dr., Lemoore, Calif.

Filed July 13, 1972, Ser. No. 271,417
Int. Cl. B62d *61/00*
U.S. Cl. 180—79.1 **3 Claims**



Apparatus is provided for automatically guiding a vehicle along a predetermined path in response to steer right, steer left, and steer without change signals obtained from trailing wheel apparatus following a precut trench. The trailing wheel is supported by a carriage assembly which is horizontally doubly-articulated and also pivotally connected to the vehicle for vertical travel. The carriage assembly includes a pair of limit switches and a vertically oriented pin normally positioned between the feeler arms thereof. Should the vehicle deviate sufficiently to one side of the predetermined path fixed by the precut trench, the carriage assembly shifts in such a manner that the pin touches one of the switch feeler arms to actuate the corresponding switch. An electrical signal developed therefrom institutes motor driven corrective action to the vehicle steering system, which corrective action is

released once the pin is again oriented between the pair of feeler arms and touching neither. In the exemplary embodiment, the system is utilized to guide a farm tractor which may be provided with means to automatically cut guide trenches for a succeeding pass within an area where earth is being worked.

3,797,603

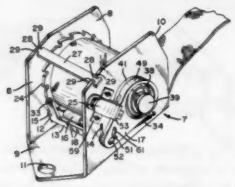
ELECTROMAGNETICALLY CONTROLLED SAFETY BELT RETRACTOR

Yogendra Singh Loomba, Roseville, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 6, 1972, Ser. No. 269,349

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 **11 Claims**



A reel type retractor for a safety belt having the feature that an electromagnet, normally activated, and holding a cam member by virtue of an armature attached thereto, maintains a pawl out of latching engagement with the reel, thereby permitting free extension of the belt. Any interruption of the current to the electromagnet permits the reel to rotate the cam, releasing a cam follower attached to the pawl bar, and allowing the biased pawl bar to rotate into locking engagement with the reel. Current interruption can be effected by the opening of a pressure switch responsive to the hydraulic pressure in a vehicle's braking system, by the opening of an inertial switch responsive to a change in velocity of the vehicle to which the switch is attached or by both types of switches working in series.

3,797,604

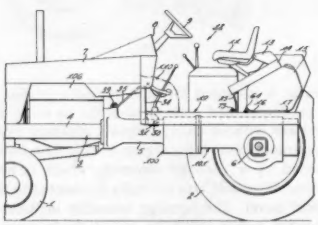
INSULATED MOUNTING FOR PLATFORM AND CAB

Owen R. Davis, Waukesha, Wis., assignor to Allis-Chalmer Corporation, Milwaukee, Wis.

Filed Dec. 12, 1972, Ser. No. 314,340

Int. Cl. B62d *39/00*

U.S. Cl. 180—89 R **10 Claims**



A vehicle having a chassis mounted unsprung on a plurality of wheels with a platform mounted on resilient means seated on planar surfaces formed on the chassis of the vehicle and fastening means to resiliently suspend the platform in this position.

3,797,605

INSTRUMENT PANEL FOR MOTOR VEHICLES, ESPECIALLY TRUCKS

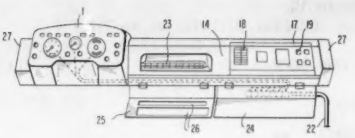
Karl Letzel, Sindelfingen; Helmut Stober, Doffingen, and Elmar Nickel, Sindelfingen, all of Germany, assignors to Daimler-Benz AG, Stuttgart-Untertuerkheim, Germany

Filed June 2, 1972, Ser. No. 259,237

Claims priority, application Germany, June 4, 1971, 2127686

Int. Cl. B60k *37/02*

U.S. Cl. 180—90 **38 Claims**



An instrument panel for motor vehicles, especially for trucks which includes a covering adapted to be mounted on a railing of the driver cab and which is equipped with instruments serving for the monitoring and actuation of the vehicle, of which at least one instrument is an indicating instrument driven travel-dependent by way of a flexible shaft; at least a large portion of the monitoring and actuating instruments—with the exception of the indicating instrument driven by way of the flexible shaft—are combined within an instrument carrier as a pre-assembled unit while the indicating instrument driven by way of the flexible shaft is connected with the railing of the driver cab independently of the instrument carrier and is covered off by a part of the covering which belongs to the instrument carrier and which is provided with a corresponding aperture.

3,797,606

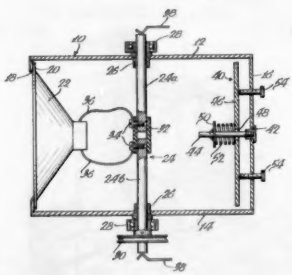
BALANCING MEANS FOR A ROTATING SPEAKER SYSTEM

John W. Edwards, Lake Zurich, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed Feb. 12, 1973, Ser. No. 331,686

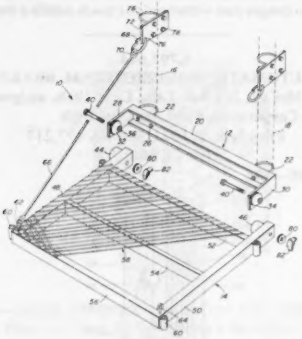
Int. Cl. H04r *1/28*; **G10k** *13/00*

U.S. Cl. 181—27 A **8 Claims**



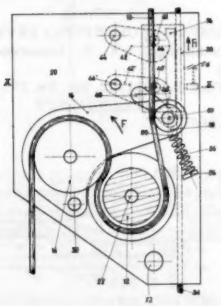
A rotating speaker system comprising a rotating cylindrical housing having a speaker therein on one side of the axis of rotation and an adjustable counterbalance on the opposite side of the axis of rotation externally adjustable for both static and dynamic balance.

3,797,607
PORTABLE WORKING PLATFORM
Louis J. Gargasz, 29 Hippocrates St., Famagusta, Cyprus
Filed Oct. 5, 1972, Ser. No. 295,289
Int. Cl. E04g 5/08
U.S. Cl. 182—82 6 Claims



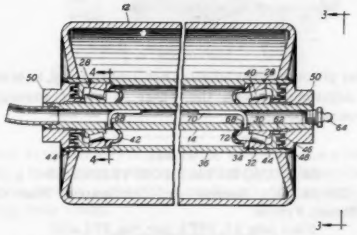
A portable platform is provided for use where stable working stages are required but which must be removed when not in use. The assembly is comprised of a bracket portion that is normally fixed to an upright support and a platform portion which is detachably connected to the bracket portion. The connecting coupling between the platform portion and the bracket portion includes cooperating male and female mating cones secured by bolts and nuts to provide a stable connection.

3,797,608
SCAFFOLDING WINCH
Joseph Virdis, Lausanne, Switzerland, assignor to Pomagalski SA, Fontaine, France
Filed Mar. 22, 1972, Ser. No. 236,922
Claims priority, application Switzerland, Mar. 26, 1971, 4524/71
Int. Cl. E04g 3/10
U.S. Cl. 182—112 7 Claims



The invention relates to an apparatus for raising and lowering a scaffolding platform along a support cable and a safety cable. The safety cable gripping means enters automatically into action when the support cable become slack and an articulated lever for pressing the cable in a grooved pulley rotates into an inactive state.

3,797,609
LUBRICATING METHOD AND APPARATUS
Francois X. Bertaud, Aurora, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Continuation of Ser. No. 102,490, Dec. 29, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,057
Int. Cl. F16c 13/00
U.S. Cl. 184—7 R 27 Claims



In an assembly having a hollow shaft or spindle and means mounted on the shaft by anti-friction bearings, lubricant for the bearings is supplied through the shaft. Means are provided to establish a pressure drop between the interior of the shaft and each of the bearings, the established pressure drop having a magnitude in excess of the pressure drop existing between the ends of the shaft to insure substantially simultaneous lubrication of each of the bearings.

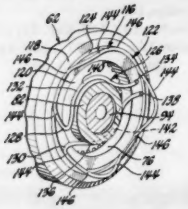
3,797,610
PIGMENTS
William Windle, Lobbs Folly, Sawles Rd., St. Austell, Cornwall, England
Continuation-in-part of Ser. Nos. 84,951, Oct. 28, 1970, abandoned, and Ser. No. . , which is a continuation-in-part of Ser. No. 712,242, March 11, 1968, abandoned. This application Nov. 24, 1972, Ser. No. 309,503
Claims priority, application Great Britain, Mar. 14, 1967, 12009/67
Int. Cl. C09c 1/02
U.S. Cl. 106—306 5 Claims

A method of preparing a stable suspension of a natural calcium carbonate pigment in water which comprises (*a*) forming an aqueous suspension containing from 70 to 85 percent by weight of natural calcium carbonate pigment, the natural calcium carbonate pigment comprising not more than 1 percent by weight of particles having an equivalent spherical diameter larger than 53 microns, and a dispersing agent which is a water-soluble anionic polymer, and (*b*) thoroughly agitating said suspension in the presence of the dispersing agent until at least 5 horsepower hours of energy per long ton of natural calcium carbonate pigment has been dissipated in the aqueous suspension.

3,797,611
SPRING AND SPRING INSTALLATION
Harmon C. Hurt, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 30, 1972, Ser. No. 302,081
Int. Cl. F16d 55/02
U.S. Cl. 188—71.8 7 Claims

A disc brake adjuster mechanism of the type using a threaded adjuster nut and nested pistons having a clutch

therebetween, with a marcel spring having two active sections acting between a surface on one of the pistons and surfaces on



the other piston and the adjuster nut, respectively, to maintain brake adjustment when the brake is either pressure or mechanically actuated.

3,797,612

BRAKING DEVICE FOR VEHICLES

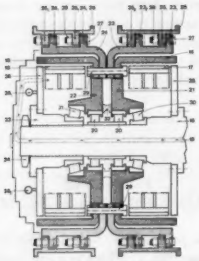
Andre Carias, 23, Avenue de Mendiguren, Nice (Alpes Maritimes), France

Filed July 13, 1972, Ser. No. 271,418

Claims priority, application France, July 13, 1971, 71.25730; July 7, 1971, 71.24601

Int. Cl. F16d *51/44*

U.S. Cl. 188—79 **7 Claims**



The invention relates to a braking device for vehicles which provides the driver with two completely independent means of braking so that he is able to use either one or the other according to the temperature reached by one of the means as the result of preceeding applications of the brake.

3,797,613

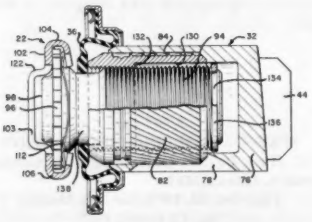
AUTOMATIC ADJUSTER WITH LIMITING DEVICE

Charles W. Nehr, Bloomfield, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 19, 1972, Ser. No. 299,072

Int. Cl. F16d *65/56*

U.S. Cl. 188—79.5 GE **1 Claim**



An adjusting wedge type brake actuator in which the degree of self-adjustment is so limited that an axially expansible plunger cannot be expanded to the point at which the connection between its parts becomes so weak that it is subject to sudden failure under load. An outwardly projecting snap ring located in a groove at the end of the adjusting stud engages the adjusting screw to limit the adjustment. This self-limited automatically adjusted brake actuator gradually becomes ineffective during lining wear after the adjustable plunger has reached its limit of adjustability rather than suddenly when the actuator no longer can withstand the loads applied thereto.

3,797,614

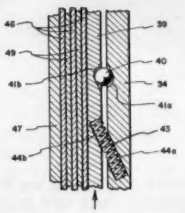
AUTOMATIC UNIDIRECTIONAL BRAKE

Frank V. McCay, Jr., Salt Lake City, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed Sept. 2, 1971, Ser. No. 177,217

Int. Cl. B60t *7/2*

U.S. Cl. 188—134 **6 Claims**



A brake is cooperatively operable with a clutch having an extended, open-ended drum rotating with an input shaft. A brake hub, spaced concentrically about the shaft at the drum's open end, carries a reactor plate and a first set of friction plates splined thereto, and the hub is capable of only limited rotation relative to a stationary reaction plate facing the reactor plate because of bearing balls interposed between the plates in complemental ramp seats. The clutch drum carries a second set of annular friction plates splined in its extended end to sandwich between the first set of friction plates. The clutch drum and second set of friction plates rotate freely about the hub in the driving direction but, upon reversal of rotation, frictional drag between the friction plates slightly rotates the hub to move the balls up their ramps to wedge the reactor plate away from the reaction plate, whereupon the reactor plate urges the first set of friction plates to clamp the second set to stop drum rotation.

3,797,615

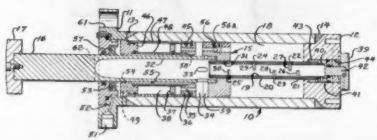
IMPACT CUSHIONING DEVICE

Harold E. Stembridge, 600 E. Greenwood Ave., Mount Prospect, Ill.

Filed Oct. 6, 1972, Ser. No. 295,558

Int. Cl. F16f *9/19*

U.S. Cl. 188—285 **3 Claims**



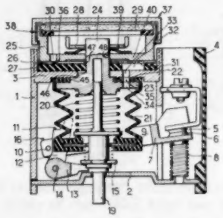
An impact cushioning device including a hydraulic fluid cylinder, piston rod unit, the unit being equipped with an orifice tube having exponentially related slots for varying the flow of fluid resulting from impact, the fluid flow resulting from impact being used to compress a compressible fluid separated from the hydraulic fluid by means of an accumulator piston.

3,797,616

PNEUMATIC TIMER

Andre Georges Faffart, and Claude Paul Vinot, both of Nanterre, France, assignors to La Telemecanique, Nanterre, France

Filed Feb. 2, 1972, Ser. No. 222,819
Claims priority, application France, Feb. 8, 1971, 71.04132
Int. Cl. F16f 9/04
U.S. Cl. 188—298 2 Claims



An open-circuit pneumatic timer of the type comprising an air intake filter, a timing device having a throttling channel, a bellows and connecting openings, wherein the filter is housed in a regulator shaped like a circular cupel, the bottom of which rests directly on the throttling channel and is provided with an opening cooperating with the said channel.

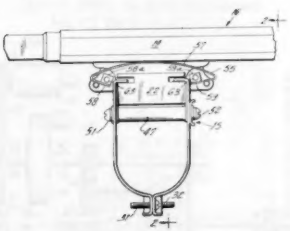
In this very simple and reliable timer, the distance covered by the fluid, outside the area where throttling is required, is kept to a minimum.

3,797,617

TROLLEY COLLECTOR HAVING REPLACEABLE GROUNDING STRAP

Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed May 15, 1972, Ser. No. 253,540
Int. Cl. B60l 5/40
U.S. Cl. 191—49 16 Claims



A trolley collector is provided with a pair of grounding elements constructed of resilient, electrically conductive material to engage and wipe across the outside surface of a trolley duct housing from which the collector is suspended.

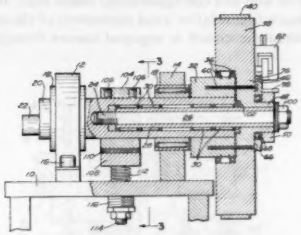
3,797,618

CLUTCH AND BRAKE ASSEMBLY

Carl G. Peterson, Smithfield, R.I., and Sulo A. Aijala, Attleboro, Mass., assignors to Carl G. Peterson Co., Smithfield, R.I.

Filed Aug. 25, 1972, Ser. No. 283,921
Int. Cl. F16d 67/02
U.S. Cl. 192—12 BA 7 Claims

A clutch and brake assembly of particular utility where a single-revolution clutching action is desired, although not limited thereto, wherein a single helical coil spring is utilized to effect both the desired clutching and braking operation. Means are provided for causing the spring to either wind or



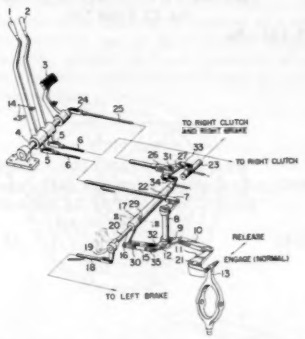
unwind. In the former situation, the spring acts as a brake by coupling the driven shaft to a fixed hub. In the latter situation, the spring acts as a clutch by coupling the driven shaft with a rotating drive wheel.

3,797,619

OPERATIONAL CONTROL SYSTEM FOR VEHICLE STEERING CLUTCHES AND BRAKES

Yasuo Suzuki, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Filed Oct. 2, 1972, Ser. No. 293,912
Int. Cl. F16d 67/02
U.S. Cl. 192—13 R 1 Claim



Left and right steering clutches of a vehicle are released and corresponding brakes are then applied by respective linkages respectively actuated by left and right steering levers, and a third linkage including a force equalizer and actuated by a single brake pedal applies equal braking force simultaneously to the left and right brakes independently of the operation of the steering clutches.

3,797,620

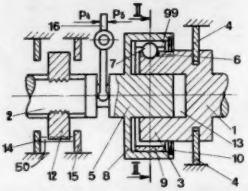
FRICTION CLUTCHES

Richard Haller, Ueberlandstrasse 240, Dubendorf, Switzerland

Filed Aug. 4, 1972, Ser. No. 277,993
Claims priority, application Switzerland, Aug. 6, 1971, 11591/71
Int. Cl. F16d 43/21, 13/16
U.S. Cl. 192—56 R 4 Claims

The invention provides a friction clutch having a driving member with a concentrically disposed cylindrical male end configuration, and a driven member with a cylindrical female

end configuration. A cylindrical prestressed coupling element which is split by a gap is interposed between the end configurations for frictional driving engagement with one of the end configurations. A coupling ball engages opposed seats afforded by the gap in the coupling element and the surface on the other of said end configurations. These seats are relatively inclined such that relative axial movement of the end configurations while the clutch is engaged causes disengagement of



the clutch by relieving the force urging the coupling element into frictional driving engagement with the respective end configurations. The gap in the coupling element may be directed obliquely and the other seat for the coupling ball may be provided by a trough-shaped elongated groove on the periphery of the male end configuration with outwardly diverging side wall end abutment surfaces on the said configuration.

3,797,621

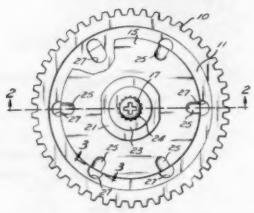
SLIP CLUTCH

Randall V. James, Watertown, N.Y., assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Nov. 17, 1972, Ser. No. 307,467

Int. Cl. F16d *7/02*

U.S. Cl. 192—56 **3 Claims**



In a torque-limiting slip clutch, spring discs engage opposite sides of a gear wheel web and are keyed to a shaft for the wheel. Spaced protuberances are struck into the rims of the spring discs and engage slots formed in the wheel web. The central portions of the spring discs are clamped against the wheel and the rim portions are free of clamping.

3,797,622

ADJUSTING MECHANISM FOR THE INTERMEDIATE PLATE IN TWO DISC CLUTCHES

Gunter Worner, Rommelshausen, and Peter Schrape, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

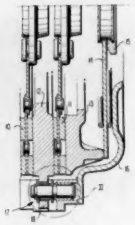
Filed Dec. 17, 1971, Ser. No. 209,311

Claims priority, application Germany, Dec. 19, 1970, 2062764

Int. Cl. F16d *13/75*

U.S. Cl. 192—111 A **19 Claims**

A readjusting mechanism for the intermediate plate in two-disk clutches intended in particular for motor vehicles, in which the intermediate plate is connected with the driving clutch part by way of spring bands or the like so as to be non-rotatable with respect thereto but axially displaceable against spring action; means are also provided for the readjustment of the intermediate plate corresponding to the wear at the clutch disks which include bolts distributed uniformly over the circumference and extending parallel to the axis which are



retained force-lockingly in the driving clutch part and extend through corresponding bores in the intermediate plate; the bolts guide the intermediate plate axially between two abutments with a play which at least approximates the vent play of the clutch, whereby the force-locking engagement can be overcome by the actuating force of the clutch but not by the return spring system of the intermediate plate.

3,797,623

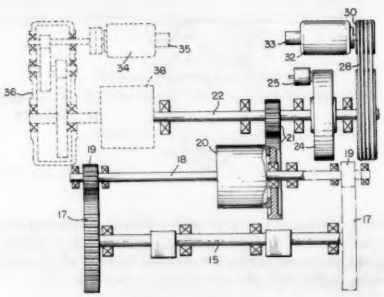
MECHANICAL PRESS AND METHOD OF OPERATION

Charles J. Gregorovich, and Robert W. Adams, both of St. Marys, Ohio, assignors to The Minster Machine Company, Minster, Ohio

Continuation-in-part of Ser. No. 238,166, March 27, 1972, abandoned. This application Oct. 13, 1972, Ser. No. 297,442

Int. Cl. F16d *67/04*

U.S. Cl. 192—146 **20 Claims**



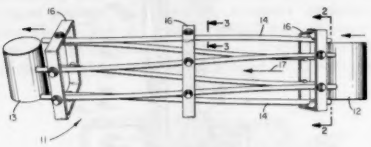
A mechanical press having a conventional speed drive and particularly characterized in the provision of a slow speed drive arrangement which can be made selectively effective and a control arrangement for inching the press when it is actuated by the conventional drive and also when it is actuated by the slow speed drive. Interlocks are provided to prevent either of the drives from becoming effective when the other drive is in effective condition.

3,797,624

CONVEYER GUIDE

Johnnie L. Powell, Turlock, and Carl L. Doyle, Modesto, both of Calif., assignors to Mandrel Industries, Inc., Houston, Tex.

Filed Jan. 13, 1972, Ser. No. 217,551
Int. Cl. B65g 11/10
U.S. Cl. 193—25 R 4 Claims



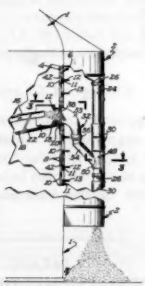
For articles such as rectangular or cylindrical containers or cans, a conveyor guide of the chute type has a number of parallel rails affixed to transverse rib members at intervals along the path of the articles, the ribs in one example being hoop-like rectangular frames arrayed to enclose the moving articles with rails on all the lateral sides. The rails are affixed by means of clamping fasteners each of which is secured to the adjacent rib by a bolt piercing the rib normal to the direction of the path. The fastener can rotate on the bolt so as to permit alignment of the rail at an angle to the rib. Thus at bends in the path, or places where the guide twists to change the vertical orientation of the articles, the rails may be smoothly curved to conform to the path without crimping at the fasteners. The rails are made of springy resilient material to assist this effect. The fasteners are relieved, at least on the side facing the ribs, to improve the clamping effect when the bolts are tightened.

3,797,625

SILO CHUTE WITH SEPARATE DISCHARGE TUBE

Raymond R. Price, Rochester, Minn., assignor to Rochester Silo, Inc., Rochester, Minn.

Continuation-in-part of Ser. No. 166,679, July 28, 1971, Pat. No. 3,709,345. This application July 27, 1972, Ser. No. 275,759. The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.
Int. Cl. B65g 11/02, 65/36
U.S. Cl. 193—34 9 Claims



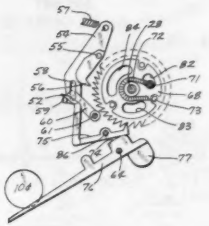
A clean access and service passage is provided within a silo chute by mounting an elongated discharge tube having a plurality of vertically spaced openings therein in an upright manner within the silo chute and utilizing this discharge tube to convey ensilage outwardly from the interior of the silo. For this purpose, a vertically adjustable transfer conduit is selectively positioned to extend between one of the access door openings in the silo wall and one of the discharge tube openings.

3,797,626

CREDIT REGISTER MECHANISM

Henry J. Albright, West Des Moines, Iowa, assignor to Fawn Engineering Co., Des Moines, Iowa

Filed Jan. 2, 1973, Ser. No. 320,304
Int. Cl. G07f 11/00
U.S. Cl. 194—2 4 Claims



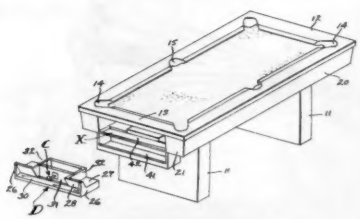
An improved coin-actuated credit register mechanism of the type useful in vending machines and the like and having a plurality of register wheels for cumulatively registering credits in response to deposit of one or more coins and in which the register wheels are controlled by pivoted lever arms adapted to function in response to deposit of appropriate coins. The lever arms are connected for pivoting movement, and are maintained in and returned to a normal position by counterweights attached thereto, which counterweights are of a mass such that the lever arms are pivoted against the force of the counterweights by the weight of a proper coin bearing against the upper surface of coin-contacting fingers of the lever arms. A suitable lever and counterweight is provided for each denomination of coin to be utilized in the mechanism, and an arcuate member moves in response to rotation of a unit register wheel to inactivate one or more lockout means, the lockout means being adapted to block operation of an associated vending machine until sufficient credits are accumulated on the credit register.

3,797,627

POOL TABLE BALL DISPENSER

Raymond J. Baker, 3136 Yale Ave., Marina Del Rey, Calif.

Filed July 12, 1972, Ser. No. 272,493
Int. Cl. G07f 17/32
U.S. Cl. 194—41 15 Claims



A ball dispensing unit for coin operated pool tables wherein pocketed balls are collected inaccessibly behind a picture window by a slide tray and dispensed simultaneously by manual operation of a coin control governed by a primary anti-cheat means and displacing the slide tray to drop the balls into a crib; dropping of additionally pocketed balls being prevented by secondary anti-cheat means witholding pocketed balls from the slide tray. The ball crib remains accessibly opened, while both the primary and secondary anti-cheat means remain inaccessibly protected and tamper proof.

3,797,628

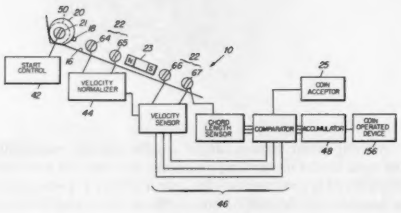
DEVICE AND METHOD FOR TESTING COINS EMPLOYING VELOCITY DETERMINING MEANS

Guy L. Fougere, Lincoln, and John L. Rothery, Marblehead, both of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.

Continuation of Ser. No. 91,871, Nov. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 812,127, Jan. 1, 1969, abandoned. This application Mar. 17, 1972, Ser. No. 235,807

Int. Cl. G07f 3/02

U.S. Cl. 194—99 80 Claims



A coin selector is disclosed which determines the denomination of a coin and which includes improved means for examining characteristics dependent upon the velocity of a moving coin which has been subjected to a magnetic field, means for examining characteristics dependent upon a chordal dimension of the coin and circuit means for comparing the resultant information with predetermined information characteristic of acceptable coins.

3,797,629

MOSAIC PRINTING HEAD

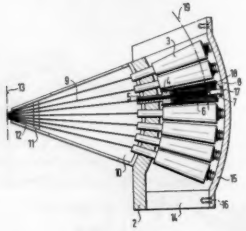
Erich Moser, Deisenhofen, Germany, assignor to Firma RENA Buromaschinenfabrick GmbH & Co., Munchen, Germany

Filed Apr. 20, 1971, Ser. No. 135,614

Claims priority, application Germany, Apr. 24, 1970, 7015426

Int. Cl. B41j 3/10

U.S. Cl. 197—1 R 8 Claims



A mosaic printing head for a line-dot printing system. A plurality of punch rods project through magnetic cores of a series of electromagnets and are fixedly connected to the armatures of such electromagnets. The total lengths of all rod-armature units are preferably equal. A single abutment, preferably spheroidal, locates the initial position of all rod-armature units. The normal spacing of the armature from the magnetic core in its initial de-energized, position is preferably slightly greater than the stroke of the rod-armature unit.

3,797,630

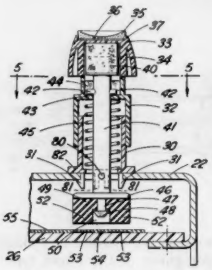
KEYBOARD FOR ELECTRONIC CIRCUIT

Sammy Zilkha, Esher, England, assignor to Alphanumeric Holdings Limited, Surrey, England

Filed July 12, 1971, Ser. No. 161,611

Int. Cl. B41j 5/08

U.S. Cl. 197—98 10 Claims



An electronic keyboard assembly is formed essentially of three parts, an integrated circuit using high input impedance metal oxide semi-conductors, a printed circuit board electrically connected to the integrated circuit and a number of key assemblies located above the printed circuit board. In a preferred construction, the key assemblies are not electrically connected to the printed circuit board, each key having a conductive element forming, when the key is depressed, a capacitive bridge coupling two conductors on the printed circuit board.

3,797,631

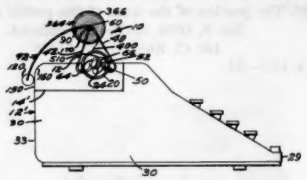
PAPER ROLL SUPPORT FOR TYPEWRITERS

Ruth B. Crone, 418 S. 38 Ave., Omaha, Nebr.

Substitute for Ser. No. 797,651, Feb. 7, 1969, abandoned. This application Oct. 18, 1972, Ser. No. 298,672

Int. Cl. B41j 15/00

U.S. Cl. 197—133 R 7 Claims



A paper roll support for attachment to a typewriter having saddle means for engaging horizontal shafts on the right and left hand sides of a typewriter for forming a part of the support, another part of the support being a means for engaging the upright surface of the backside of the carriage of a typewriter.

3,797,632

PHASE COMPENSATED MULTIPLE MOVING HEAD INSPECTION APPARATUS

Darius O. Riggs, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

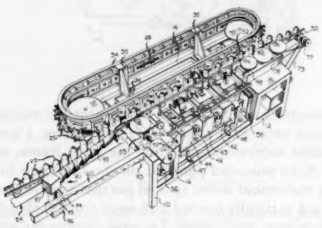
Division of Ser. No. 209,144, Dec. 17, 1971, Pat. No. 3,198,883. This application May 11, 1973, Ser. No. 359,246

Int. Cl. B23q 5/22

U.S. Cl. 198—19 7 Claims

Apparatus and method for driving three article inspection stations out of phase with one another for inspecting moving

articles with a minimum expenditure of drive power. In this invention, three inspection station drive mechanisms are utilized. Each of the three drive mechanisms is an identical unit utilizing a cam to produce an oscillating output from an arm, the cam being driven by a continuously rotating input shaft. Each of the three units are coupled in series in a linear array and driven by a common drive motor. A split coupling is used to connect the three drive units together, allowing the phase of the cams contained within the unit to be set independently. The oscillating arms are set out of phase with each other by approximately 120°. The oscillating output arms drive article inspection stations on which are mounted inspection apparatus. The motion of the article inspection stations is such that, as articles are precessed past each station, the station tracks the article for a period of time at a constant velocity



and inspects the article for various attributes, the station then returning to its starting point at a velocity greater than its inspecting velocity to pick up and track the next container presented to it. This function is performed by all three inspection stations on each article that passes through the inspection apparatus. By driving the three drive units out of phase with one another, the power needed to accelerate one unit may be furnished, in part, from the deceleration of another unit in the series drive train. Thus, the total power required to drive the apparatus is reduced and the fluctuations within the system caused by relatively high transfers of power from acceleration to deceleration is reduced, thereby allowing the operation of the system without the use of an energy storage element, such as a flywheel, to help absorb these large fluctuations in power requirements.

3,797,633

WEIGHING APPARATUS

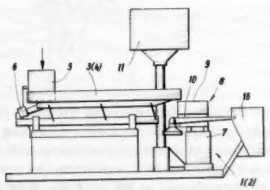
Adolf Stambera, Stuttgart, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed Dec. 13, 1971, Ser. No. 207,331

Claims priority, application Germany, Dec. 9, 1970, 2060490

Int. Cl. B65g *69/00*

U.S. Cl. 198—39 **4 Claims**



A weighing apparatus for relatively bulky food, or the like, in which the material is conveyed in excess of a unit quantity to a dual conveyor system carried by a scale, the material is weighed and the electronically controlled conveyors discharge the desired quantity of the material into a collecting hopper.

3,797,634

ADJUSTABLE PLURAL CONVEYOR

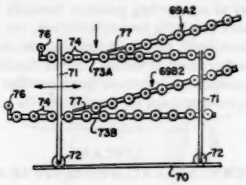
Owen L. Field, c/o Claser Bros., 4800 S. Bogle Ave. Corona del Mar, Calif.

Division of Ser. No. 873,185, Nov. 3, 1969, Pat. No. 3,616,944.

This application Feb. 3, 1971, Ser. No. 112,338

Int. Cl. F16d *13/04, 23/00*

U.S. Cl. 198—43 **1 Claim**



A conveyor system for efficiently filling, checking, loading and delivering a variety of items of merchandise to a large number of customers using a plurality of trucks. Salesmen's orders, each covering a large number of separate items, are written on two different forms (Form A for cigarettes, Form B for cigars, e.g.). The forms are then collated in accordance with pre-established route lists, listing for each truck delivery the customer stops in order. Orders are filled by warehousemen in reverse order of the route lists, Form A orders on conveyor A and Form B orders on conveyor B, the merchandise being moved along to a station, where the orders are packed up and taken to an invoice clerk for billing. Conveyor A has an elevator which places it immediately on top of conveyor B. Each conveyor has a switch making it possible to switch the merchandise to either of two parallel, double-deck storage conveyors of extended length leading to separate loading docks. All merchandise for a particular truck is stored on one of these storage conveyors while being invoiced and is then checked and loaded into the truck in inverse order of delivery, the Form A merchandise on a telescopic loading conveyor fitting into the front of the truck above the Form B merchandise.

3,797,635

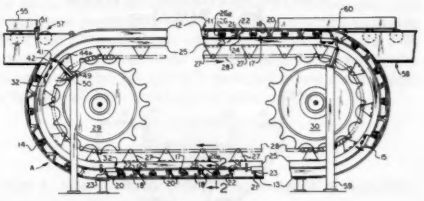
ACCUMULATOR TYPE SLAT CONVEYOR

Martin H. Boisen, Chula Vista; Steve Crevar, Jr., San Diego, and Robert T. Morris, El Cajon, all of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 30, 1972, Ser. No. 284,858

Int. Cl. B65g *37/00*; **B61b** *13/00*

U.S. Cl. 198—75 **12 Claims**



An accumulating conveyor comprises a plurality of load supporting slat units, each of a length proportioned to the shortest load to be handled on the conveyor. Each slat unit is provided with a clutch, which normally grips a drive belt to advance its respective slat unit along the accumulator conveyor. A retractable stop pin is mounted in the path of the clutches, and when extended engages the clutch of an approaching slat

unit to free it from the drive belt. The stop pin is maintained in extended position by photo cell means activated by a light beam directed across the path of a load approaching on a feed conveyor. When the light beam is intercepted by an approaching load, it deactivates the photo cell and withdraws the stop pin, whereupon the clutch engages the drive belt and advances the slat unit to supporting position beneath the oncoming load. As long as the passing load continues to intercept the light beam, successive slat units continue to be advanced by their clutches to supporting position beneath the load. When the load passes the light beam, however, the latter again activates the photo cell, thereby extending the stop pin to clutch releasing position and arresting further feeding of slat units onto the accumulator conveyor until another load arrives in position to again intercept the light beam.

3,797,636

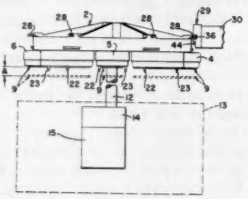
TURNTABLE STOPPING APPARATUS

Stuart G. MacDonald, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,412

Int. Cl. B65g *29/00*

U.S. Cl. 198—210 **8 Claims**



A turntable stopping apparatus is adapted for use with a turntable of the kind supported for rotation about a rotary axis and for translation along the same axis. The apparatus is provided with at least one engageable stop member connected to the turntable for synchronous movement therewith and with a catch member for engaging the stop member, as the turntable is rotated about the rotary axis, to stop the turntable in a certain position of rotation. The catch member is configured to release the stop member from engagement, on translation of the turntable along the rotary axis, for allowing further turntable rotation until the same or another stop member is engaged.

3,797,637

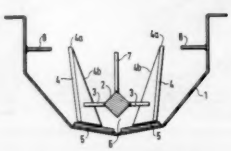
RECIPROCATING CONVEYORS

Ing Kurt Wissmann, 406 Vios-in Finchliln Mishlenhenwig:25, Muhlenheuweg, Germany

Filed Dec. 28, 1971, Ser. No. 213,226

Int. Cl. B65g *25/08*

U.S. Cl. 198—221 **4 Claims**



To overcome the problems associated with conveying metal chip, especially cast-iron chip, the reciprocating conveyor is provided with means whereby, on the return stroke of the conveying rod, a free passage, effective more particularly for fine chip, is left between the entraining means.

3,797,638

RECIPROCATING ARTICLE TRANSFER APPARATUS FOR MACHINE TOOLS

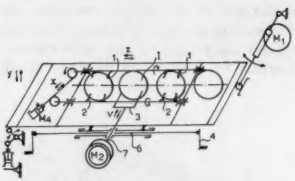
Bruno Bronzini, 18/4, Strada Alberoni, Turin, Italy

Filed June 17, 1971, Ser. No. 154,033

Claims priority, application Italy, July 31, 1970, 69647/70

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AD **2 Claims**



Reciprocating article transfer apparatus for machine tools, comprises a vertically reciprocable main frame, a horizontally reciprocable subframe carried by the main frame, and a plurality of forks mounted pairwise on the subframe for vertical swinging movement about spaced parallel axes so that pairs of forks swing vertically toward and away from each other to engage and release workpieces. Turnover means can also be provided between adjacent pairs of forks, for inverting workpieces between work stations.

3,797,639

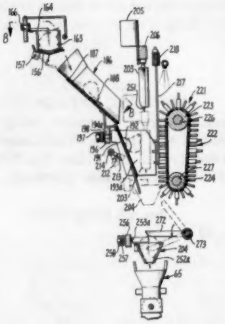
MACHINE FOR ORIENTING PEARS

Laurence H. Smith, Lafayette, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Filed June 28, 1972, Ser. No. 267,017

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **14 Claims**



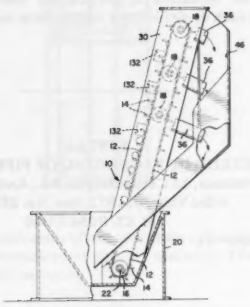
Means are provided for receiving the pears in bulk and for feeding these in single file to a pear orienting means which positions each pear in a vertical position in which the stem end of the pear is lowermost. In this position the pears are fed into a conical cup as shown at **65** in FIG. **3** in U.S. Pat. No. 3,018,179. Following placement in the vertically positioned conical cup, the pear is grasped by the pear gripping pads **71** after which the cup is moved 90° to a horizontal position in which the pear is moved toward a core tube on which it is impaled for peeling and coring by mechanism as shown in the aforementioned patent and in U.S. Pat. Nos. 3,055,408 and 3,058,502.

3,797,640

AUTOMATIC APPARATUS FOR ORIENTING AND FEEDING BOTTLES OR LIKE ARTICLES HAVING NECKS

Samuel S. Aidlin, 214 Beaumont St., and Stephen H. Aidlin, 3855 Shore Pkwy., both of Brooklyn, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,312
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 10 Claims



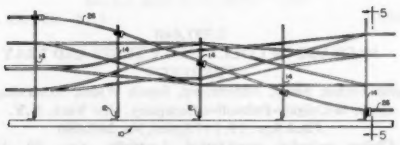
Automatic orienting and feeding apparatus for bottles with necks, or like articles, in which the bottles are picked up from a bin by an upwardly tilted escalator with shelves. The properly oriented bottles are blown off the shelves through an outlet opening into a chute adjacent the escalator top. The misoriented bottles are gripped by their thicker portion as they pass the outlet opening and are not blown off but are discharged after they pass the escalator top. In a modified embodiment the escalator is formed with a downwardly and rearwardly sloping portion and the initially misoriented bottles are blown off the shelves at that portion into a second chute in oriented position. Two or more escalators may be arranged in a bank to pick up from a common bin with their outlet openings offset relative one another so that their chutes do not block one another and deliver to a common conveyor belt.

3,797,641

CONTAINER TWISTING STRUCTURE FOR RINSER OR THE LIKE

John Nelson, Newington, and Robert J. Schultz, Portland, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Sept. 13, 1971, Ser. No. 179,876
Int. Cl. B65g 11/20
U.S. Cl. 193—43 A 6 Claims



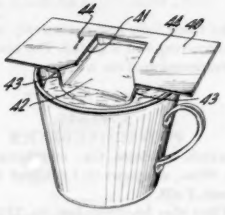
Containers are fed by line pressure through a plurality of resilient guide rods, which rods are bent to define a helical path for the containers, and novel means is provided for supporting these guide rods at bulkhead stations along this helical path. Each bulkhead has an opening through which the containers can pass, and a series of hexagonal openings provided adjacent the container opening in each bulkhead are adapted to receive soft plastic plugs which can be clamped in these hexagonal openings to support guide rod supporting members each of which is mounted in a predetermined angular relationship with respect to the plane of the bulkhead.

3,797,642

INFUSION PACKAGE

Reuven Dobry, Stamford, Conn., and Salvatore Casamassima, Floral Park, N.Y., assignors to Beech-Nut, Inc., New York, N.Y.

Filed Feb. 7, 1972, Ser. No. 223,933
Int. Cl. A23f 1/08; B65d 85/70
U.S. Cl. 206—.5 5 Claims



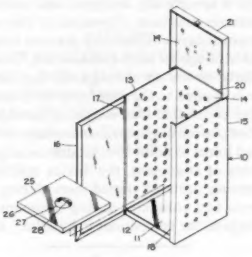
An infusion package such as a tea bag is suspended in a horizontal position at about or near the upper surface of the extracting liquid by attachment to a member which at least partly engages the rim of the extracting vessel. The member is adapted to permit rapid extraction of the package.

3,797,643

LANTERN TOTE

Robert W. Shupp, P.O. Box 273, Jefferson, Wis.

Filed July 28, 1972, Ser. No. 276,239
Int. Cl. B65d 51/28, 85/54
U.S. Cl. 206—1 R 1 Claim



A tote for storing and transporting lanterns and carrying same either lighted or unlighted within the closed tote. The tote has three perforated fixed sides and a hinged fourth side or door and a hinged cover which can be latched down over the door. The carrying handle is insulated from the remainder of the tote and storage space is provided below a removable false bottom member on which the lantern rests.

3,797,644

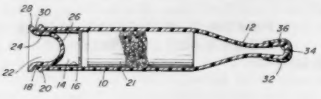
FILTER

Herman L. Shaw, Miami Beach, Fla., assignor to Aquafilter Corporation, Miami, Fla.

Filed Apr. 21, 1972, Ser. No. 246,364
Int. Cl. B65d 79/00; B65b 3/04
U.S. Cl. 206—41 R 4 Claims

A cigarette holder-filter includes a cigarette receiving socket at one end and a mouthpiece at the other end. The interior of the holder includes a fibrous filtering material impregnated with water. The ends of the holder are sealed in a manner both to prolong substantially the shelf life of the unit

and to enable the holder to be filled fully with water. This is achieved by forming a minute air-escape hole in the otherwise sealed mouthpiece end of the filter to enable the interior of



the filter to be filled fully and excessively with water before the cigarette-receiving end is sealed. The hole is small enough to minimize evaporation of the water.

3,797,645

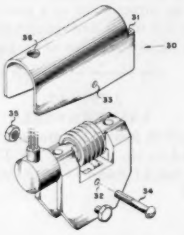
PROTECTIVE DEVICE

Daniel H. Forsyth, Marietta, Ga., and James M. Melvin, Jr., State Line, Miss., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 30, 1972, Ser. No. 258,083

Int. Cl. B65d *81/00, 85/00, 85/38*

U.S. Cl. 206—46 H **2 Claims**



This device is specifically designed and constructed to provide and maintain precision alignment of the mating parts of shear type transducers and thereby prevent lateral movement which causes damage to such transducers. These transducers are particularly prone to damage during their installation when torque is applied to the mounting bolts therefor.

A uniformly controlled load is applied through the device to the transducer preventing lateral movement in excess of that of its designed limits to allow for installation alignment. Due to the preciseness of alignment, the device may also be used to retain the mating parts of transducers during fabrication as well as to serve as a container during shipment and storage to prevent damage to the transducer in handling, etc.

3,797,646

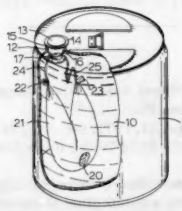
TWO-INGREDIENT CONTAINER SYSTEM

Frederick F. Horne, Carmel Valley, Calif., assignor to Airrigation Engineering Company, Inc., Carmel Valley, Calif.

Filed Oct. 5, 1971, Ser. No. 186,738

Int. Cl. B65d *81/32*

U.S. Cl. 206—47 A **1 Claim**



A two-ingredient container system. A drum for a main liquid, such as a solvent, has a bunghole at its upper end; a cap for the bunghole has a depending stem with a lower flange. A second ingredient, liquid or solid, is placed in a thin plastic tube of soft collapsible plastic and is tied by strings or similar means at both ends, and the strings are then tied to the stem of the cap. The tube-encased plastic is then put into the drum, either before or after the drum is filled with the main liquid. When the cap is taken off the bunghole, the strings are used to pull up one end of the tube sufficiently enough to be able to cut off that end and open it, and then the other end may be pulled up and used to shake the second ingredient into the liquid. The invention is particularly useful in combining materials such as dichlobenil with sodium methyl dithiocarbamate.

3,797,647

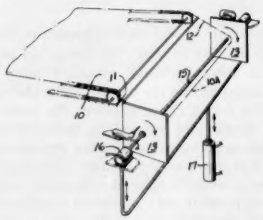
METHOD OF PACKAGING OF PIPE FABRICS

Daniel Frishman, 14 Castle Heights Rd., Andover, Mass.

Filed May 30, 1972, Ser. No. 258,124

Int. Cl. B65d *85/66*

U.S. Cl. 206—51 **3 Claims**



In this invention both edges of a pile fabric are simultaneously sewn, in the form of an Archimedean spiral, to rigid sheets such as heavy cardboard or plastic. A package for the storage and/or shipping of pile fabrics is formed of the following elements: 1) The rigid sheets to which the pile fabric is sewn form the side walls of the package. 2) A protective wrapper placed around the pile fabric is attached to the side walls. 3) The rigid sheets are held separated, so that the pile fabric does not sag, by (a) cardboard tubular separators, or (b) wooden sticks, or (c) the protective wrapper, or (d) a combination of these.

3,797,648

PACKAGE OF COLLAPSIBLE TUBES AND TRAY THEREFOR

John Arthur Shaw, Abbotsford, South Wales, Australia, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,480

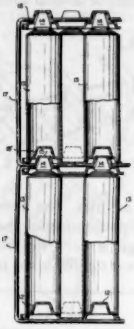
Claims priority, application Australia, Apr. 20, 1971, 4667/71

Int. Cl. B65d *77/26*

U.S. Cl. 206—277 **6 Claims**

A package of collapsible tubes comprising a tray at top and bottom of a plurality of similarly oriented tubes arranged side by side in parallel alignment, each tube having a cap closing one end and the other end open, each tray having a plurality of indentations and corresponding protrusions, the caps of said tubes being in the indentations of the top tray and the protrusions on the bottom tray extending into the open ends of the tubes and giving support against accidental deformation in a

radial direction, and means to retain the trays together against the ends of the tubes. Two or more assemblies are stacked in a



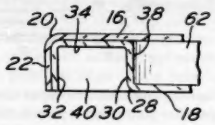
carton with the protrusions of one assembly extending into the corresponding indentations of another assembly. The tray per se is also part of the invention.

3,797,649

COIN HOLDING DEVICE

Louis A. Ringle, Wilmington, Del., assignor to Franklin Mint Corporation, Franklin Center, Pa.

Filed Jan. 5, 1972, Ser. No. 215,598
Int. Cl. B65d *1/34, 41/02*; **G07d** *9/00*
U.S. Cl. 206—0.82 **3 Claims**



A coin holding device having opposed members which enclose the coin and hold it therebetween. The opposed members have means for engagement with the display device in which the coin may be stored.

3,797,650

SHOW-TOTE BALE BAG

Julia R. O'Brien, and Gary F. O'Brien, both of 626 Union City Rd., Greenville, Ohio

Filed Feb. 29, 1972, Ser. No. 230,304
Int. Cl. A45c *3/00*; **B65d** *71/00*
U.S. Cl. 206—83.5 **1 Claim**

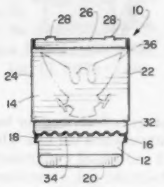
A bale of hay is provided with a weather proof canvas covering. The covering is form fitting and provides access to the enclosed bale of hay from two sides and one end by use of a zipper. Additionally, the covering has some means to facilitate handling of the enclosed bale of hay.

3,797,651

MATCH BOOK HOLDER

James Adams Van Meter, 15357 Magnolia Blvd., Van Nuys, Calif.

Filed Jan. 6, 1972, Ser. No. 215,881
Int. Cl. B65d *1/00*; **A24f** *27/00*
U.S. Cl. 206—107 **1 Claim**



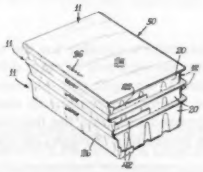
A device to retain a book of matches wherein the match book is located directly adjacent a base plate with the lower edges of the match book frictionally wedged within a U-shaped lip of the base plate, the match book is confined against lateral movement by upstanding sides connected to the base plate, a cover is hingedly connected to the upper edge of the base plate, the cover is to frictionally lock with the sides when in the closed position.

3,797,652

NESTED STACK OF STERILE SHIELDED CONTAINERS

Sheldon R. Chesky, Rolling Meadows, Ill., assignor to The Kendall Company, Walpole, Mass.

Division of Ser. No. 121,080, March 4, 1974, Pat. No. 3,730,338. This application Sept. 29, 1972, Ser. No. 293,638
Int. Cl. B65d *71/00*
U.S. Cl. 206—229 **6 Claims**



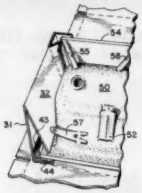
A nested stack of sterile shielded containers wherein each container includes a hollow sterile tray to retain sterile articles therein, with the tray including, a top for access to the articles, a bottom, and at least one side wall connecting the top and the bottom. A shield including a flexible sheet covers at least a portion of the tray top and one side wall, and the sheet is sufficiently large to prevent contamination of the tray or articles during grasping of the shield by a user's hands. Each shield, except for the one covering the uppermost tray in the stack, is partially retracted into the top of its respective tray by the nested bottom portion of the tray thereabove.

3,797,653

SHIPPING CONTAINER FOR BATHTUBS

James R. Goodsite, Sandusky, Ohio, assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,510
Int. Cl. B65d *5/44, 81/00, 85/64*
U.S. Cl. 206—320 **1 Claim**



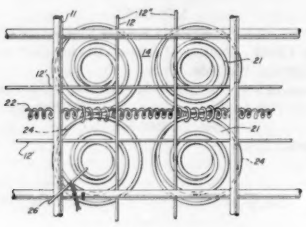
A shipping container is described for large, heavy plumbing fixtures, such as bathtubs and the like. The container includes a pair of reinforced and folded end frames that are positioned at each end of the bathtub, and, a continuous wrapper element which encloses the bathtub. The wrapper is secured to the sides of the end frames and includes top, bottom and side panels which extend around the bathtub to provide a durable, convenient, and inexpensive shipping container.

3,797,654

SHIPPING CONTAINERS

Rex S. Spiller, Sheboygan, Wis., assignor to Spiller Spring Company, Sheboygan, Wis.

Filed Jan. 10, 1972, Ser. No. 216,666
Int. Cl. B65d *7/20, 71/00, 85/62*
U.S. Cl. 206—326 **5 Claims**



A container particularly suitable for the shipment of compressed coil springs having a pair of crate sides each side comprising a coarse and a fine mesh grid, wherein the coarse mesh grid provides the strength necessary to maintain the spring units in the compressed state and the fine mesh grid prevents the contents from protruding through said crate sides.

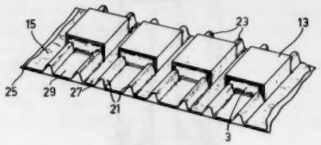
3,797,655

PACKAGE CONTAINING ELECTRIC COMPONENTS

Salomon Boone, and Frans Van Der Heiden, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,968
Claims priority, application Netherlands, Sept. 25, 1971, 7113223
Int. Cl. B65d *73/02*
U.S. Cl. 206—330 **4 Claims**

A package containing electric components in which the body of the components is placed in a cavity of a profiled paper strip and are prevented from moving in the transverse direction of the strip by parallel ribs. The cavities and the ribs are located on the same side of the profiled strip and are covered by a second smooth paper strip which is connected to the profile strip by means of several adhesive connections, one



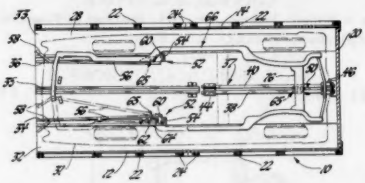
on each side of the cavities. The connection wires are enclosed by the two strips throughout their length and circumference. The package is very flexible in the longitudinal direction and has a great rigidity in the transverse direction.

3,797,656

VEHICLE POSITIONING AND RESTRAINT APPARATUS

Elwyn L. Kitchen, Jr., Troy, and Walter Cwycyshyn, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1972, Ser. No. 296,757
Int. Cl. B60p *7/08*; **B61d** *45/00*; **B65d** *25/62*
U.S. Cl. 206—335 **4 Claims**



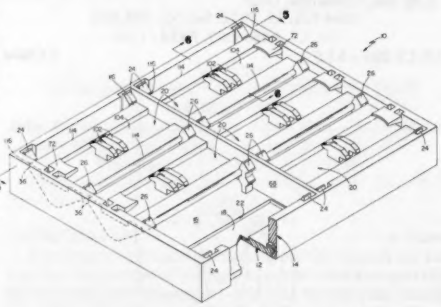
A vehicle positioning and restraint apparatus having a latch mechanism and parallel guide rails which slidably receive and support tie-down devices attached to the underside of a vehicle and allow the vehicle to float on its own suspension while being transported by a carrier.

3,797,657

PACKAGE

Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 27, 1972, Ser. No. 248,086
Int. Cl. B65d *7/00, 57/00, 85/62*
U.S. Cl. 206—356 **16 Claims**



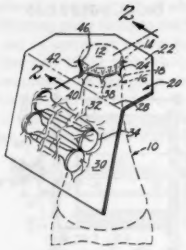
Dispenser package for razor blade units, the package having resilient recessed lugs for receiving and retaining opposite sides of the blade units.

3,797,658

PACKAGE ATTACHMENT FOR CONTAINERS

Bobbie D. Peacock, c/o Ma Industries Inc., 2350 Sylvan Rd., East Point, Ga.

Filed Oct. 14, 1971, Ser. No. 189,334
Int. Cl. B65d *23/12, 79/00*
U.S. Cl. 206—484 9 Claims



A card package for attachment to soft drink bottles and the like to hang and carry a premium item such as golf tees. The method of making the film card package comprises on a large sheet of chipboard, cardboard or the like punching at spaced locations a plurality of lines intersecting at the center and forming the diameter of a circle. Then laying the premium items such as golf tees at each location punched and thereafter heat and vacuum sealing a sheet of film over the face of the sheet and over the premium items and the intersecting lines after which the individual cards are die punched out from the board at the same time punching out a circular disc with the center of the intersecting lines as the center of the circle which leaves a hole with the film over the cut portion of the lines along the edge of the hole in the card. The film around the hole is resilient and elastic and when stretched in place over a soft drink neck pulls the edge of the hole tightly against the neck of the bottle beneath the cap securing the card tightly in place against the bottle. This provides a measure of security against accidental displacement as well as discouraging improper removal by patrons prior to purchase.

3,797,659

MODULAR SCREEN

John H. Kauffman, Richland Center, Wis., assignor to Herbert S. Simpson, Trust and Bruce L. Simpson, Trustee, both of Chicago, Ill.

Filed Nov. 29, 1972, Ser. No. 310,393
Int. Cl. B07b *13/04*
U.S. Cl. 209—85 14 Claims

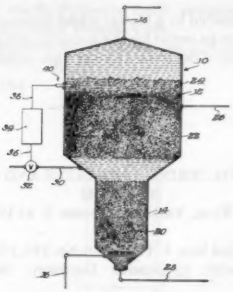
A modular screen for classifying materials comprising a screen cloth supported on a frame, said frame comprising a plurality of modular side frame sections and a pair of cross members at opposite ends interconnecting the outer ends of the end ones of said modular side frame sections; each of said side frame sections having a pair of precisely parallel enlarged opposite end faces adapted to be secured to the end face of an adjacent section in end to end relation therewith whereby the area of the screen frame can be changed by the addition or subtraction of pairs of modular side frame sections.

3,797,660

ION EXCHANGE RESIN SEPARATION APPARATUS AND METHOD EMPLOYING SONIC MEANS TO SENSE RESIN LEVEL

Cole R. Miller, Medford Lakes, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Continuation of Ser. No. 878,784, Nov. 21, 1969, abandoned.
This application June 23, 1972, Ser. No. 265,924
Int. Cl. B03b *11/00*
U.S. Cl. 209—499 5 Claims



A separation column and method for separating anion and cation exchange resins in an upwardly flowing stream of water employing ultrasonic level sensing means. The sensing means include first and second transducer means for respectively sensing and receiving an ultrasonic signal in the frequency range of 1 to 5 megacycles per second. In one embodiment of the invention, the level of resin within the column is sensed when the resin interrupts transmission of the ultrasonic signal at a probe. In a second embodiment, the ultrasonic signal is directed toward the surface of the resin, and the time delay for receipt of an echo is measured. This time delay, in turn, gives an indication of the level of ion exchange resin within the column.

3,797,661

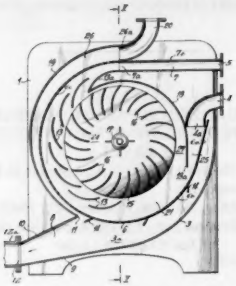
METHOD AND APPARATUS FOR SEPARATING GRANULES FROM A LIQUID

Heinrich Buzga, Grevenbroich, Germany, assignor to Maschinenfabrick Burkau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed May 4, 1972, Ser. No. 250,270
Claims priority, application Germany, May 26, 1971, 2126069
Int. Cl. B01d *29/40*
U.S. Cl. 210—73 10 Claims

Granules formed of a synthetic material by immersion in water, form a mixture with a large amount of water. The granules are separated from the water by a first stream of air produced by a rotary blower whose air stream presses the mixture against a sieve so that water is discharged through the sieve while the remaining wet granules are further transported

by the stream of air along the sieve where remaining water is removed through the sieve while tangentially directed second



air streams produced by a blower wheel transport the granules from the sieve to an outlet for the granules, and are discharged on the other side of the sieve through a gas outlet.

3,797,662

PRESSURE-FILTERING APPARATUS AND FILTERING METHOD

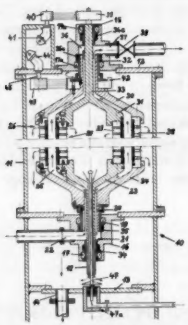
Hans-Joachim Titus, Von-Hees-Strasse 5, 6148 Heppenheim, Germany

Filed Nov. 8, 1971, Ser. No. 196,370

Claims priority, application Germany, Nov. 9, 1970, 2054968

Int. Cl. B01d *21/26*

U.S. Cl. 210—78 **17 Claims**



An apparatus and method for pressure-filtering suspensions inside a filter chamber to separate them into liquor and solids in a continuous operation, the apparatus consisting essentially of two concentrically journalled oppositely rotating filter drums forming an annular filter chamber between their walls, the pressurized suspension being fed into the filter chamber via a feed chamber and an axial, annular feed duct between the drum shafts, the dried product cake being similarly discharged via an axial, annular discharge duct between the drum shafts and a discharge chamber. The apparatus may include a washing zone in the filter chamber being supplied with pressurized washing liquid through the inside of the inner filter drum.

3,797,663

METHOD OF SEPARATING PARTICLES CONTAINED IN A LADEN FLUID, AND A DYNAMIC SEPARATOR FOR PERFORMING THIS METHOD

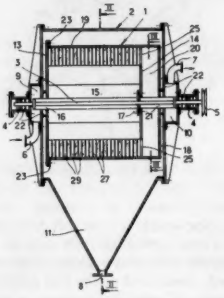
Lucien R. Bourdale, 30, Arehue Aristide Briand, Arpajon, France

Filed Nov. 22, 1971, Ser. No. 200,846

Claims priority, application France, Nov. 23, 1970, 70.41908

Int. Cl. B01d *21/26*

U.S. Cl. 210—78 **4 Claims**



A method and apparatus for separating particles from a fluid, wherein the particle-laden fluid is subjected to centrifugal force to cause a radial movement of the particles and fluid adjacent a radial surface of a rotating filtering partition disposed at right angles to its axis of rotation. A suction is applied through the partition to cause an axial movement of the fluid through the partition for separating the fluid from the particles.

3,797,664

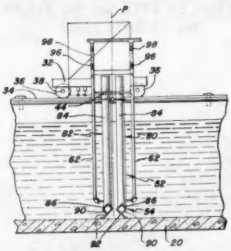
SLUDGE REMOVAL APPARATUS

Howard L. Pentz; Chandrakant Parkhani, both of Lansdale, and Frank Majeron, Philadelphia, all of Pa., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 12, 1972, Ser. No. 217,379

Int. Cl. B01d *21/02*

U.S. Cl. 210—83 **19 Claims**



A method and apparatus for removing settled solids from the bottom of a sedimentation tank is disclosed in this application. The apparatus consists of a bridge that is supported for reciprocal movement on the tank and has eduction means for the settled solids depending therefrom. The drive means for the traveling bridge includes speed control means to vary the speed of the bridge to maintain a substantially uniform solids concentration in the sludge flowing through the eduction means at a substantially constant flow rate. In one embodi-

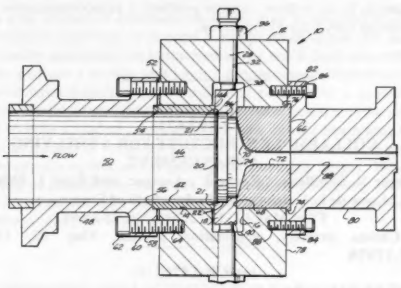
ment, the eduction means consists of a plurality of transversely aligned inverted T-shaped tubes, each of which has a plurality of spaced openings along the bottom thereof. A deflecting plate is pivoted intermediate opposite edges below the openings and is moved between first and second positions to direct the sludge towards the openings in either direction of travel of the bridge. In an alternate embodiment, the eduction means consists of first and second longitudinally spaced inverted T-spaced eduction tubes, each of which has one set of openings and a deflecting plate fixed to the horizontal portion of the tube. One set of openings and a deflecting plate are directed towards one end of the tank while the second set of openings and the second deflecting plate are directed towards the opposite end so that one eduction tube collects sludge as the bridge travels in the one direction and the second eduction tube collects sludge as the bridge is traveling in the opposite direction.

3,797,665

SCREEN CHANGER

James P. Paquette, Sterling Junction, Mass., assignor to The Berlyn Corporation, Millbury, Mass.

Filed Nov. 20, 1972, Ser. No. 307,815
Int. Cl. B01d *29/00*
U.S. Cl. 210—236 **8 Claims**



A screen changer wherein sealing pressure is obtained against a breaker plate and filter screen element by providing a screw adjustment from an external adapter which bears against a sealing bearing. The sealing bearing bears against a slide plate carrying the breaker plate to provide a simple and effective externally controllable sealing pressure engagement.

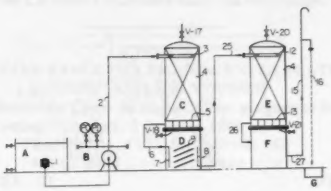
3,797,666

APPARATUS FOR SEPARATING FINE OIL DROPLETS AND SLUDGE SUSPENDED IN LIQUID

Toru Nakanishi; Junichi Matsui; Setsuji Yonehara; Masahiro Aoki; Kiyonori Ishiguro, all of Otsu; Tatsuo Satake, Nishinomiya, and Shingi Azuma, Osaka, all of Japan, assignors to Toray Industries, Inc., Tokyo and Toray Engineering Co., Ltd., Osaka, both of, Japan

Filed Aug. 10, 1971, Ser. No. 170,470
Claims priority, application Japan, Aug. 15, 1970, 45-71147
Int. Cl. B01d *17/04, 39/04*
U.S. Cl. 210—265 **4 Claims**

The invention relates to the separation of fine oil droplets and sludge suspended in liquid which is achieved by the provision of an apparatus comprising at least one pair of (a) a packing chamber characterized as being irregularly packed with small pieces cut from fiber web and (b) a settling chamber; the liquid was fed into the packing chamber (a) where the fine oil droplets coalesce and, at the same time, the



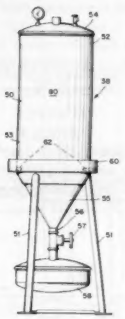
sludge is filtered out and then the liquid so treated was fed into the settling chamber (b) where the coalesced oil droplets are separated.

3,797,667

WHIRLPOOL SEPARATOR DEVICE

Robert L. Rod, Pacific Palisades, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Filed Feb. 10, 1972, Ser. No. 225,268
Int. Cl. B01d *21/26*
U.S. Cl. 210—304 **4 Claims**



A whirlpool separator is described in which a charge of fluid is circulated at approximately 20 to 30 revolutions per minute in a container. Foreign matter having a specific gravity greater than one is thrown by centrifugal force to the periphery of the container. These heavier particles fall to the lowermost portion of the container for eventual discharge. Foreign oily material having a specific gravity less than one is forced to the top of the fluid and into the vortex created by the circulating fluid where it is removed by hydrophobic material located near the vortex. Small fines are removed by filtration.

3,797,668

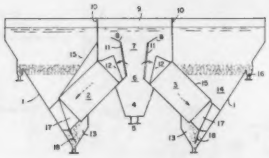
SEPARATION DEVICE

Jacob Pielkenrood; Willen Lee Bernard Ambrosius, and Willen Kooistra, all of Krommenie, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands

Continuation of Ser. No. 50,282, June 26, 1970, abandoned.
This application Sept. 14, 1972, Ser. No. 288,964
Int. Cl. B01d *21/02*
U.S. Cl. 210—522 **16 Claims**

A device for removing different components from a liquid, comprising a supply and a discharge chamber between which one or more separators having sloping passages between corrugated plates, thoughs or tubes are provided, which device furthermore comprises additional means for accomplishing a supplementary separation of such components upstream

and/or downstream of the separator or separators, which additional means may comprise flotation and/or sedimentation chambers with means for adding flocculation and/or precipitation agents to the liquid to be treated, and/or one or more additional separators arranged in such a manner that the liquid to be treated is flowing either in series or in parallel through these separators.



3,797,669

DEVICE FOR DISPLAYING CARPET SAMPLES

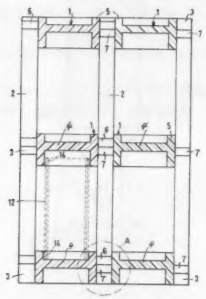
Peter Schacht, Tranustein Marienstr. 3, Ruhpolding, Germany

Filed Apr. 21, 1972, Ser. No. 246,331

Claims priority, application Germany, Apr. 23, 1971, 2120050

Int. Cl. A47f 7/17

U.S. Cl. 211—44 **15 Claims**



This invention relates to a holder adapted to be mounted in a framework and to receive a carpet sample in the form of a roll comprising a base portion, wall means at the edge of said base portion and extending substantially normal to the plane of said base portion, and means on said holder whereby it may be mounted in a framework.

3,797,670

INDOOR LOADABLE OUTDOOR CLOTHES DRYER

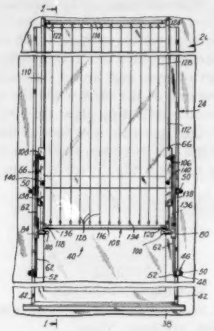
Octavio D. Lavemour, 465 W. Broadway, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,341

Int. Cl. F26b 25/00

U.S. Cl. 211—94 **12 Claims**

A dryer for articles such as clothes including brackets which are rigidly mounted on the inner or outer sides of an openable window of a dwelling. Associated with the brackets is an article hanging frame that can be swung between a vertical storage position parallel to a wall of the dwelling, either inside or outside of the window, and a horizontal operative position. In the operative position the frame can be slid horizontally between a location substantially within the dwelling and a location substantially outside the dwelling. When the frame is in operative position inside the dwelling wet articles to be aired easily can be loaded onto the same after which the frame is slid through the window to its external location where the articles can be dried or aired in fresh air and sun and with the aid of any wind that may be blowing, thereby facilitating and improving drying and airing, and preventing an increase of humidity and providing more available space within the dwelling.



Thereafter the frame is slid back into the dwelling through the window for unloading the dried or aired articles. When the frame is in its vertical storage position it is inconspicuous and takes up very little living space.

3,797,671

COLLAPSIBLE STRUCTURE FOR A SHELVING ARRANGEMENT

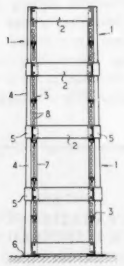
Roger V. Sebilleau, "Kerheol", Avessac, and Kurt I. Eklund, 24, rue de la Guichardais, Redon, both of France

Filed May 12, 1972, Ser. No. 252,661

Claims priority, application France, May 12, 1971, 71.17078

Int. Cl. A47f 5/10

U.S. Cl. 211—176 **11 Claims**



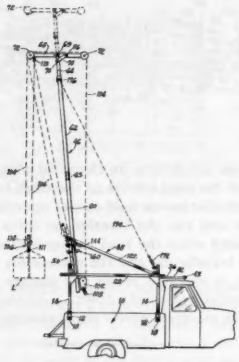
The present invention concerns a dismountable or collapsible storage rack structur. from which metallic shelves can be assembled and, more especially, to shelves for pallets. Said structure includes vertical posts connected in pairs by crossbars to form rigid frames. Horizontal, load supporting beams are mounted in a manner adjustable to different heights between the posts of two adjacent parallel frames. Connecting means on the ends of said beams and on said posts provide for the rigid interlocking of the various components of the shelf structure.

3,797,672

APPARATUS ATTACHABLE TO A TRUCK BODY OR THE LIKE FOR USE FOR HOISTING OR LIFTING, OR AS AN ELEVATED SUPPORT

Howard H. Vermette, No. 7-143rd St., Hammond, Ind.

Filed Mar. 10, 1972, Ser. No. 233,582
Int. Cl. B66c 23/36
U.S. Cl. 212—8 18 Claims



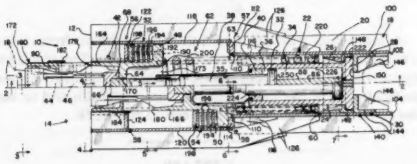
A unit formed of components which may be shipped in disassembled condition to occupy a minimum of space, yet may be readily assembled and attached to the truck body of a vehicle to provide a mobile unit having a main beam which may be moved from a horizontal transporting position to a substantially vertical or upright position so that said beam may be utilized to raise a load to a substantial height, or said beam may be used as a support whereby a person can stand thereon to perform certain operations requiring considerable height. When the unit is attached to the truck body it has the mobility of the truck and moves with the truck from one place to another and is always ready for instant use.

3,797,673

CUSHIONING ARRANGEMENT FOR RAILROAD CARS

David W. Daugherty, Jr., Downers Grove, Ill., assignor to Cardwell Westinghouse Company, Chicago, Ill.

Division of Ser. No. 91,383, Nov. 20, 1970, Pat. No. 3,713,546.
This application May 26, 1972, Ser. No. 257,457
Int. Cl. B61g 9/16
U.S. Cl. 213—8 3 Claims



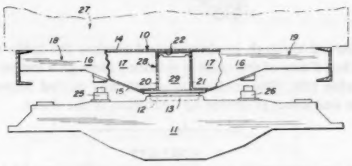
A cushioning arrangement for railroad cars that is of the "end of car" cushioning type and includes a hydraulic cylinder keyed to the car fixed center sill against buff and draft forces and having its piston rod secured to a slidably mounted coupler adapter member having flanges projecting from either side of same that each carry a resilient draft impact absorbing cushion that cooperates with fixed draft stops. A compression spring acts between the hydraulic cylinder and the adapter member to bias the ram to its neutral position after a buff stroke, and the adapter member flanges engage over solid buff limiting stops at the end of the buff stroke. The hydraulic cushion includes a combined programmed metering-pressure sensitive orifice and control arrangement that insures needed control over the ram to overcome train line tendencies.

3,797,674

CENTER BRACE FILLER AND CENTER PLATE ASSEMBLY

David J. Reynolds, Upper Arlington, Ohio, assignor to Buckeye Steel Castings Company, Columbus, Ohio

Filed May 11, 1971, Ser. No. 142,162
Int. Cl. B61f 1/14, 5/16; B61g 7/10
U.S. Cl. 213—57 3 Claims



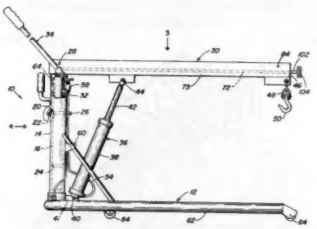
A center brace filler for the center sill of a railway vehicle truck provides cross-walls which are integral with the sidewalls of the brace which lie against the walls of the center sill. The center brace is rigidly secured to the center bowl and is rigidly attached to the center sill with its upper extremities spaced from the top of the center sill.

3,797,675

CRANE

James M. Moore, 1929 Prospect St., National City, Calif.

Filed May 25, 1972, Ser. No. 256,809
Int. Cl. B65g 7/08
U.S. Cl. 214—1 D 6 Claims



A crane including a base that supports telescoping upright members. A boom is pivotally carried on the extendible upright member upwardly. A fluid motor is pivotally connected with the boom and is adapted to to be moved, as a unit, to various heights.

3,797,676

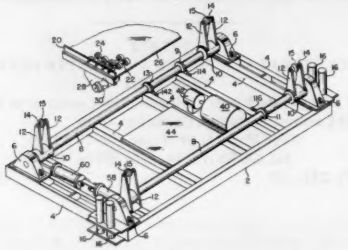
ADJUSTABLE SHEAR BED

William G. McCarthy, 1235 Westlake Ave., North, Seattle, Wash.

Filed May 19, 1971, Ser. No. 144,824
Int. Cl. B66c 23/00
U.S. Cl. 214—1 R 5 Claims

A table for use in conjunction with a steel shear which is adapted to support a sheet or plate prior to shearing and further, serve as a bed for the pieces sheared. The table is movable between a raised position level with the shear bed and a lower position whereat the table is either level or tipped.

at the discretion of the shear operator. The table position is controlled by a pair of rams which rotate shafts which have secured thereto arms which support the table. When the rams



are moved through predetermined strokes the table remains level but if one of the rams is actuated through a longer stroke, the table tilts. The table is automatically cycled between the upper and lower positions by operation of the shear.

3,797,677

APPARATUS FOR DIVIDING A PILE OF NEWSPAPERS INTO SEPARATE PORTIONS

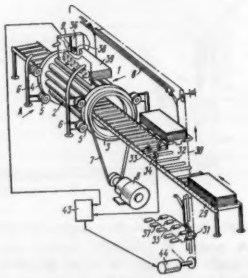
Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181; Nikolai Ivanovich Anikanov, ulitsa Bolshaya Bronnaya, 2/6, kv. 6, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow; Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev; Samuil Aronovich Goltsman, Borschagovskaya ulitsa, 8, kv. 12, Kiev; Alexandr Ivanovich Oleinik, ulitsa Mechnikova, 11, kv. 14, Kiev, and Mikhail Evseevich Frumkin, Naberezhnaya Novikova-Priboya, 9, kv. 34, Moscow, all of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,384

Claims priority, application U.S.S.R., Feb. 11, 1972, 1742655

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 D **3 Claims**



In an apparatus for dividing a pile of newspapers into separate portions in which the members in the form of bodies of rotation have perforations in the peripheries thereof, connectable to a source of vacuum supply, and are arranged so that they define a drum received eccentrically internally of a larger drum defined by a series of rollers, in the area of the pile being divided, whereby in operation, the members in the form of bodies of rotation and the rollers engage alternatingly the lowermost newspaper in the pile, with a vertically displaceable receiving hopper adapted to accumulate therein the newspapers separated from the pile being mounted under the smaller drum, and a rollerway for delivering the separated portions of the pile from the apparatus and for feeding the piles to be divided into the apparatus located downwardly of the hopper.

3,797,678

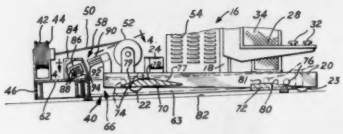
LOAD CARRIER AND TRANSFER CAR CONTROL

Raymond H. Richardson, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Feb. 28, 1973, Ser. No. 336,885

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 B **10 Claims**



In a storage installation, an electrical connector couples the controller of the load carrier to the transfer car drive means and the controller on the load carrier operates the load carrier drive motor and also the transfer car drive motor, the latter being operated when the load carrier is positioned for transport by the transfer car and the connectors are coupled. The load carrier is elevated above the storage installation floor during transport by way of a downwardly inclined ramp which minimizes the elevation power requirements.

3,797,679

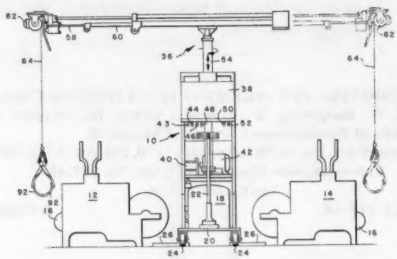
LOOM DOFF TRUCK

Carl P. Hunter, Red Springs, N.C., and Charles W. Kay, Anderson, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 30, 1971, Ser. No. 139,003

Int. Cl. B60p *1/54*

U.S. Cl. 214—75 H **2 Claims**



A loom doff truck to doff full rolls of fabric from a loom which eliminates a great deal of manual labor. The truck has a hydraulic control system which allows the operator to automatically move the lifting elements into position and to move the roll of fabric into the storage bin on the truck.

3,797,680

MECHANISM FOR TRANSFERRING AND COMPACTING REFUSE IN A REFUSE COLLECTION APPARATUS

James Dennis, Culpepper, Va., assignor to City Tank Corporation, Culpepper, Va.

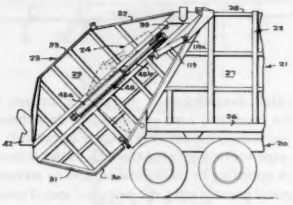
Filed Mar. 3, 1972, Ser. No. 231,700

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **11 Claims**

In a refuse collection apparatus having a refuse storage body and a refuse receiving hopper mounted on the rear end of the storage body, a mechanism for transferring refuse deposited in the hopper, into and compacting the refuse in, the storage body generally comprising a carrier assembly

disposed in the hopper and movable rectilinearly and longitudinally therein, a panel assembly pivotally mounted at the forward end thereof to the rearward end of the carrier assembly, means for moving the carrier assembly along the line of travel thereof in predetermined sequence, and means for pivoting the panel assembly relative to the carrier assembly in a predetermined sequence in cooperation with the carrier assembly to provide a refuse transferring and compacting cycle, the panel assembly including a bottom plate member having a first planar section disposable in alignment with a bottom plate member of the carrier assembly, and a second planar section disposed at an angle to the first planar section, and a plurality of transversely spaced channel-shaped members rigidly secured to the upper side of said bottom plate member to provide resistance against bending stresses.



3,797,681

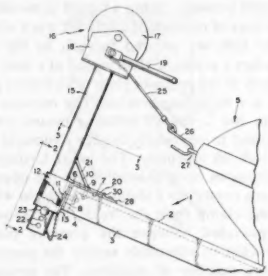
APPARATUS FOR MOUNTING A WINCH ON A TRAILER

Norman A. Brettrager, 5270 East St., Saginaw, Mich.

Filed Apr. 13, 1972, Ser. No. 243,653

Int. Cl. B60p *3/10*

U.S. Cl. 214—85.5 **5 Claims**



Apparatus for mounting a winch on a trailer comprises an upright body having its lower end slideably and removably accommodated in a sleeve mounted at one end of the supporting bed of a trailer. At its upper end the body carries a rotary winch and a force transmitting line that is adapted to be attached to an article that is to be supported on the trailer. Between its ends the body carries a laterally projecting foot which overlies the trailer bed, a brace extending between and being connected to both the foot and the body. Releasable latch means are carried at the lower end of the body to prevent inadvertent removal of the latter from the sleeve.

3,797,682

METHOD FOR LOADING PARTICULATE MATERIAL ONTO OPEN RAILWAY TRUCKS

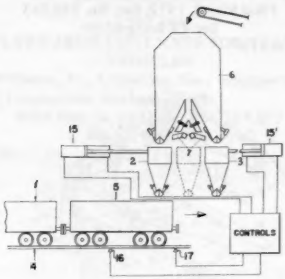
Johan De Beer, Randburg, South Africa, assignor to Edward L. Bateman Limited, Boksburg North, Transvaal Province, South Africa

Filed Apr. 17, 1972, Ser. No. 244,657

Claims priority, application South Africa, June 30, 1971, 71/4290; Dec. 14, 1971, 71/8387

Int. Cl. B65g *67/22*

U.S. Cl. 214—152 **6 Claims**



The invention is concerned with a method and means of loading open railway trucks with particulate material so that continually moving trucks are loaded to capacity, wherein the discharge point for the particulate material at the loading station is made to move initially with the truck being loaded, then maintained stationary and finally in a direction opposite to that of the truck.

3,797,683

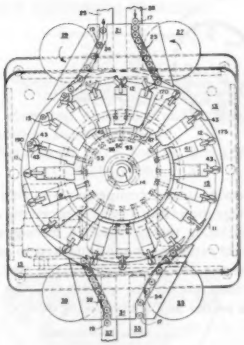
ROTARY EXTRACTOR METHOD AND APPARATUS

Anthony V. Simpatico, Palisades Park, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,337

Int. Cl. B65g *65/02*

U.S. Cl. 214—301 **4 Claims**



A rotary extractor including a continuously rotatable turret having a plurality of transfer units mounted thereon for movement about the rotational axis of the turret with each of the transfer units having an axis extending radially of the turret. Each transfer unit has a pair of cam operated jaws for synchronously gripping a formed pomade such as lipstick which is to be extracted from its mold. A second cam is pro-

vided for raising the transfer unit with respect to the turret after the jaws have grasped the pomade thereby separating the pomade from its mold. A third cam means is provided for rotating the jaws, and therefore the pomade, 180° after the transfer unit has been raised. Once the jaws have been rotated, the transfer unit is lowered by the second cam means and the jaws opened thereby positioning the extracted pomade on a transport for further processing.

3,797,684

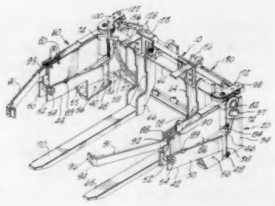
TRANSPORTING AND DUMPING APPARATUS

Vernon J. Brandt, 5712 Ave. 430, Reedley, Calif.

Filed May 2, 1972, Ser. No. 249,563

Int. Cl. B65g *65/00*

U.S. Cl. 214—313 **15 Claims**



An apparatus for handling large bin containers includes a frame assembly adapted to be fixably mounted on a vehicle and a bin carrying assembly pivotally attached to the frame assembly for movement between a bin transporting position and a bin dumping position. The bin carrying assembly is provided with forks for supporting a bin thereon and movable clamping arms to secure a bin thereto. A lock assembly locks the movable elements of the apparatus in various fixed arrangements to insure proper operation of the apparatus.

3,797,685

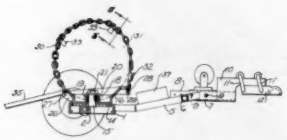
VEHICLE TOWING DEVICE

Darwin N. Frost, Box 428, Wapakoneta, Ohio

Filed July 3, 1972, Ser. No. 268,462

Int. Cl. B60b *29/00*

U.S. Cl. 214—334 **13 Claims**



A vehicle towing device comprising a wheeled trailer having an undercarriage mounting a bed for receiving a pair of wheels of the vehicle being towed, the bed having wheel receiving wells and wheel retaining means adapted to engage and lock the wheels of the towed vehicle to the bed, together with detachable ramp means for positioning the wheels of the towed vehicle on the bed of the towing device.

3,797,686

APPARATUS FOR CONVEYING PIPE LONGITUDINALLY

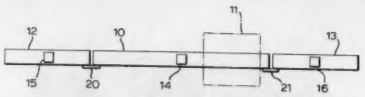
Harold F. Jarvis, Moffat, Canada, assignor to Shaw Pipe Industries, Ltd., Rexdale, Ontario, Canada

Filed July 5, 1973, Ser. No. 376,733

Int. Cl. B65h *51/00*

U.S. Cl. 214—338 **7 Claims**

Apparatus for conveying pipe longitudinally comprises a main conveyor section and first and second terminal conveyor sections positioned respectively to advance incoming pipe sections to the main conveyor section and to receive treated pipe sections from the main conveyor section, each conveyor section being adapted to locate the pipe sections continuously about a longitudinal axis while longitudinally advancing the sections at a selected feed. Each of the terminal conveyor sections is movable longitudinally by power means to effect coupling of the incoming pipe sections and detachment of the leading pipe sections, respectively, and is selectively operable to advance a pipe section carried thereby at the selected speed to permit such coupling or detachment, and to advance a pipe section at a speed greater than the selected speed prior to such coupling, or after such detachment.



3,797,687

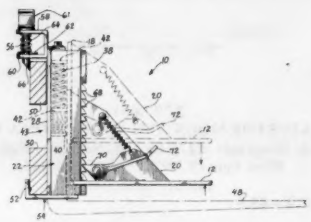
FORK LIFT CLAMP

Joseph Silva, Richmond Hill, N.Y., assignor to Saul Freier, Richmond Hill, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,794

Int. Cl. B66f *9/18*

U.S. Cl. 214—620 **6 Claims**



An adjustable pressure clamp adapted to mount above and between the tines of the fork of a fork lift truck whereby loads raised by the fork are secured thereon by the clamp. The clamp comprises a pressure plate joined to a slide which rides perpendicularly of the pressure plate in a channel provided for the purpose in a mounting bracket. The mounting bracket is provided with two U-shaped securing means which are oppositely disposed to oppositely engage structural cross-members of the fork lift assembly. The lower U-shaped securing means comprises an open channel while the upper U-shaped securing means comprises a sliding locking pin which permits removal of the clamp from the truck. Spring-loaded ratchet means are provided between the pressure plate and the mounting bracket to adjustably secure the pressure plate in any of a finite number of positions. The pressure plate is spring-urged to assist in release of loads.

3,797,688

SAFETY CAP UNIT

John C. Porcelli, Lincolnwood, and Efrem M. Ostrowsky, Highland Park, both of Ill., assignors to Federal Tool & Plastics, a division of VCA Corporation, Chicago, Ill.

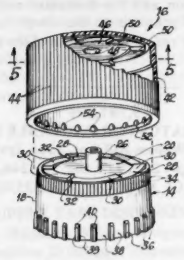
Filed June 14, 1972, Ser. No. 262,742

Int. Cl. B65d *55/02*; **A61j** *1/00*

U.S. Cl. 215—9 **9 Claims**

The invention relates to a safety cap unit for containers such as bottles and the like, whereby unauthorized removal of the

cap from the container is prevented. More particularly, it relates to a closure unit comprising an inner or closure cap which is used to close the open end of a container cooperatively connected with an outer or actuator cap superimposed over the inner cap, with interlocking means between the outer and inner caps to permit the two caps to be rotated in unison



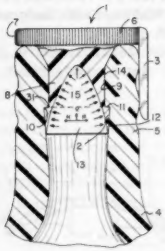
to lock the inner cap as a closure for the container so that unlocking of the inner cap with respect to the container takes place only when the outer cap is moved axially upward relative to the inner cap so that there is an interengagement between the outer and inner caps. The outer cap has a top wall surface of such character as to permit it to flex or give sufficiently to permit interengagement of the outer and inner caps.

3,797,689

TAMPER-PROOF CLOSURE FOR A PRESSURIZED CONTAINER

Domas Adomaitis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,886
Int. Cl. B65d *41/20*
U.S. Cl. 215—42 **12 Claims**



A tamper-proof closure having an area of least strength some distance down its neck is provided. The combination of the tamper-proof closure which also has an anchor portion and a bottle which has an internal lock shoulder is part of the invention. The bottom of the anchor is indented with a recess so that the pressure coming upward in the bottle neck presses the sides of the closure against the sides of the bottle to form a better seal between the closure and the bottle. The inner side of the closure recess and the inner edge of the external lock shoulder form an area of least strength so that when pressure is applied to lift the closure out of the bottle neck, the closure snaps along the area of least strength.

3,797,690

PREPARATION OF DEGRADABLE POLYMERIC MATERIAL

Lynn J. Taylor, Haslett, and John W. Tobias, E. Lansing, both of Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1971, Ser. No. 206,144
Int. Cl. B44d *1/02*
U.S. Cl. 220—1 R **10 Claims**

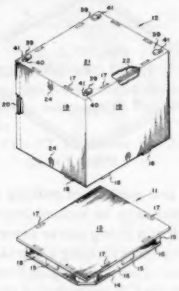
There is disclosed the preparation of a degradable polymeric material by applying a degradation-sensitizing reagent to the surface of a polymeric material and then diffusing the reagent into such surface.

3,797,691

MODULAR CARGO CONTAINER FOR TRANSPORT VEHICLES

John E. Williams, Jr., Chamblee, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 10, 1972, Ser. No. 251,969
Int. Cl. B65j *1/02*
U.S. Cl. 220—1.5 **10 Claims**



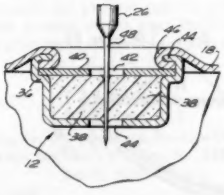
A container consists of a plurality of modules interconnected one to another to form a preselected, standard size assembly to permit the movement thereof through existing transportation systems as a unit. Break apart features between the several modules facilitate the handling and loading thereof at times other than during shipment. Also each module is so constructed as to permit folding for stacking and packing to minimize its space requirements when empty.

3,797,692

DRUM PROVIDED WITH PORT ASSEMBLY FOR GAS MONITORING

Cesar Santoni, Hamilton, Ontario, Canada, assignor to Greif Bros., Corporation, Delaware, Ohio

Filed July 28, 1972, Ser. No. 276,130
Int. Cl. B65d *39/00, 41/00*
U.S. Cl. 220—24 R **5 Claims**



An improved drum is provided with a port assembly adapted to permit internal gas monitoring without necessitating the opening or unsealing of the drum. The drum includes a

cup-shaped member having an open end sealingly mounted in an end closure or sidewall of the drum and a closed end extending into the drum interior. A passageway extends through the cup closed end into the cup interior. A plug of penetrable, self-sealing material is held in position in the cup covering the passageway. Means are provided to guide the needle of a test syringe through the plug and cup passageway into the drum interior.

3,797,693

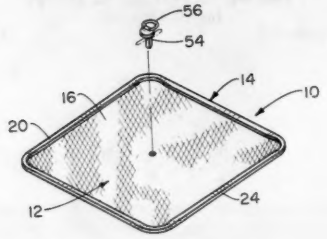
POLYGONAL SHAPED FRY PAN COVER AND METHOD OF MAKING

Robert A. Baker, Santa Barbara, Calif., assignor to Aluminum Filter Company, Santa Barbara, Calif.

Filed June 28, 1972, Ser. No. 266,979

Int. Cl. B65d *51/16*

U.S. Cl. 220—44 A **10 Claims**



The apparatus and method of making a polygonal-shaped fry pan utensil which is to be located over the top of an open heating vessel such as a frying pan to prevent splatter from the heating vessel comprising forming a plurality of corners within a rigid edging material until the edging forms a closed configuration, placing the edge of the material and a screen assembly within a mold, the corner forming portions of the mold being smaller in width than the remaining forming portions of the mold, applying a uniform force to the mold resulting in cold working of the edging material into engagement with the screening assembly to securely bind such in a taut position, the corners of the edging being cold worked to a greater degree than the remaining portion of the edging to insure that the screening assembly will be held taut within the formed edging.

3,797,694

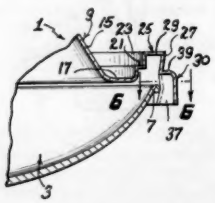
VENTABLE SEALED CONTAINER

Robert B. See, deceased, late of San Pedro, Calif., and Raymond C. Baird, Jr., Los Angeles, Calif., assignors to Barbara R. Alfred, (See), trustee, Los Angeles, Calif., by said Baird

Filed Sept. 2, 1970, Ser. No. 68,923

Int. Cl. B65d *51/16, 85/00*

U.S. Cl. 220—44 R **9 Claims**



The cover of the container, which may also serve as a plate, is attached to the peripheral lip of the receptacle and is movable between a lowered position wherein the lip is seated in a channel recess sealing the container closed and a raised position wherein the lip is engaged in a V-shaped recess defined by the cover skirt. A plurality of venting ports in the form of U-shaped channels are formed at spaced intervals in the cover skirt and vent the interior of the container to the atmosphere when the cover is in the raised position. The cover is designed so that a predetermined degree of positive internal pressure will move the cover from the lowered sealed position to the upper vented position and the container may be resealed by applying downward pressure on the cover to move the lip of the receptacle past a restricted portion of the skirt and into the channel.

3,797,695

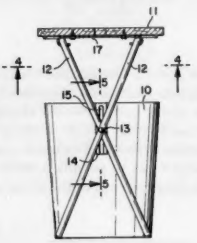
SEATING APPARATUS FOR PORTABLE CONTAINERS

Pui-Yee Law, 3207 Walnut Hill Apt. 2016, Irving, Tex.

Filed Apr. 21, 1972, Ser. No. 246,404

Int. Cl. A47c *7/00*; **B65d** *25/00*

U.S. Cl. 220—85 R **9 Claims**



A seating apparatus for portable containers comprising a pair of U-shaped support members pivotably coupled to the sides of the container, and movable vertically upwardly and downwardly thereon, and a removable seat, which may form the cover of the container, having at least one mounting bracket affixed thereto for engaging the support members and securing the seat during use.

3,797,696

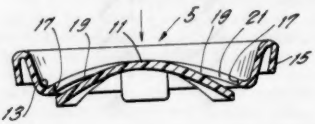
NON-SPILL CONTAINER CLOSURE

James W. Dibrell, Malibu, Calif., assignor to Nospil Limited, Los Angeles, Calif.

Filed Nov. 26, 1971, Ser. No. 202,076

Int. Cl. A47g *19/22*

U.S. Cl. 220—90.4 **1 Claim**



An improved non-spill drinking cup cover is formed in one section wherein a radially extending central web portion is joined a reentrantly-shaped rim section in the cover member. The juncture of the web portion with the rim section defines a relatively deep annular trough extending around the cover section in constant relationship with the outer periphery of the rim section. A plurality of slits in the web portion of the cover member define a plurality of radially extending fingers which are normally integral with the web portion of the cover member. The radially extending fingers are urged downwardly and away from the web portion of the cover member when a user presses down on any part of the central area of the web

portion in the cover member and thus resiliently deforms the cover member. The downward extension of the radially extending fingers away from the web portion of the cover member exposes a series of liquid discharge slots in the web portion. The annular trough may then be filled with liquid, from the cup interior, discharged through slots in the web by conventionally tilting the cup, and the user may drink from any angular position on the rim of the annular trough. The cover member may be formed of thermoforming plastic or other thin flexible, resilient materials.

Sanitization of the closure drinking surface may be achieved by providing the external surface of the closure with a strippable sanitary coating of plastic film that may be stripped from the surface of the closure by a user just prior to consumption of the liquid content of the container.

3,797,697

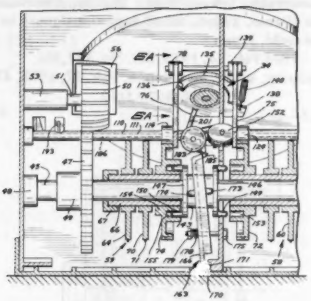
DUAL SUPPLY TAPE DISPENSING MACHINE

Ewald A. Arp, Hopkins, Minn., assignor to W. G. Larson, Edina and Sheldon D. Moody, Bloomington, both of, Minn.

Filed Nov. 17, 1972, Ser. No. 307,701

Int. Cl. B65h *35/02*

U.S. Cl. 221—13 **15 Claims**



A tape dispensing machine adapted to selectively dispense a tape, as a tape of trading stamps, from a first tape supply or a second tape supply. First and second tape drive wheel means are rotatably mounted on an axle in proximity to a first and second tape supply. A shift assembly is operative to selectively move a clutch means between the first and second stamp drive wheel means. Manual drive means including finger controlled means for preselecting the quantity of stamps to be dispensed is drivably associated with either the first or second drive wheel means through the clutch means.

3,797,698

DEVICES FOR DISPENSING ARTICLES FROM A STACK OF ARTICLES

Jean Hemard, Paris, France, assignor to Societe Pernod, Paris, France

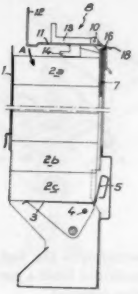
Filed Feb. 5, 1973, Ser. No. 329,443

Claims priority, application France, Feb. 22, 1972, 72.05979

Int. Cl. B65h *43/02*

U.S. Cl. 221—20 **4 Claims**

A device for dispensing articles comprises a vertical chute for a stack of articles. The chute is closed from below by a pivotal element which supports the stack. An arrester element is slidable along a slot in the wall of the chute and engages the



uppermost article of the stack. When all the articles have been discharged, the head pivots to lock the element in its closed position.

3,797,699

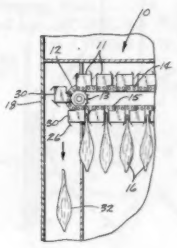
ARTICLE HOLDING AND DISPENSING DEVICE

Francis A. Wittern, Des Moines, and Arthur N. Wirstlin, Altoona, both of Iowa, assignors to Fawn Engineering Corp., Des Moines, Iowa

Filed Feb. 17, 1972, Ser. No. 227,568

Int. Cl. G07f *11/00*

U.S. Cl. 221—85 **1 Claim**



An article holding and dispensing device for use in vending machines or the like is disclosed. A plurality of elements are mounted in alignment on a continuous loop of a conveyor such that articles to be held and dispensed are held between adjacent elements on the lower portion of the continuous loop for individual delivery upon stepwise actuation of the conveyor. Each element has a rearwardly extending article engaging means such as a resilient pointed member adapted to cooperate with the next following element to hold an article therebetween until the element reaches a delivery position, whereupon the element moves away from the following element and the article held therebetween falls away for delivery.

3,797,700

SMOKING SET

Nobuo Murata, No. 4-4-1 Sendagi, Bunkyo-ku, Tokyo, Japan

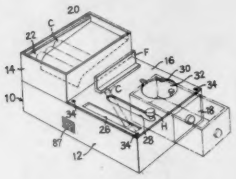
Filed Dec. 20, 1972, Ser. No. 316,748

Int. Cl. A24f *47/00*

U.S. Cl. 221—145 **5 Claims**

A smoking set which comprises a cigarette storeage container, a feed means for delivering a cigarette, a gas jet means, an ignition means for igniting a gas jet, a pivoted cigarette holder, and a suction means for drawing air through the holder

to aid in lighting the cigarette and in which upon a single manual operation of an actuating means a cigarette is



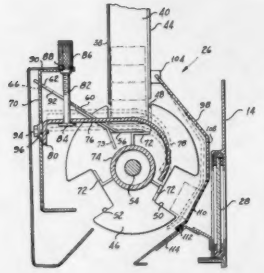
delivered to be inserted into the holder and automatically lighted by a flame produced from a gas jet which is also automatically discharged and ignited.

3,797,701

GUM AND MINT DISPENSER FOR MERCHANDISING MACHINE

Joseph P. Allocco, Mendham, and Bruce B. Landis, Long Valley, both of N.J., assignors to Rowe International Inc., Whippany, N.J.

Filed Jan. 17, 1972, Ser. No. 218,070
Int. Cl. G07f *11/52*
U.S. Cl. 221—155 **7 Claims**



A merchandising machine gum and mint dispenser in which an adjustable member on the machine frame provides a bottom for the compartment of a rotary display and delivery wheel located below a column of articles of merchandise and provides a curved guide portion for an article carried from the bottom of the column to a display location and in which a freely suspended transparent guide flap guides the article in the course of its movement from the curved guide portion to the display location and supports the article at the display location in a position in which it can be viewed by a customer through a window in the cabinet door.

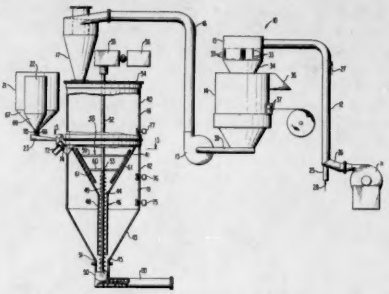
3,797,702

SCRAP RECOVERY AND FEED SYSTEM

Joseph D. Robertson, 980 Swathmore Dr., N.W., Atlanta, Ga.

Filed Mar. 29, 1971, Ser. No. 128,973
Int. Cl. B01f *7/20, 7/24*
U.S. Cl. 222—1 **8 Claims**

A scrap recovery and feed system wherein scrap plastic is recovered from a plastic manufacturing process, such as in the manufacture of sheet, film, formed or molded objects, and the scrap plastic is chopped up and fed back to the processing machine along with the base material, such as a virgin plastic material and various additives. The scrap is fed with an auger from an upper hopper toward the outlet opening of a lower hopper containing the base material. The materials are mixed just prior to entry in the extruder or other processing machine.

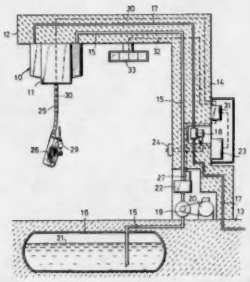


3,797,703

FUEL SUPPLYING APPARATUS

Shunro Yamawaki, Tokyo; Naoki Makita, Yokohama, and Kazuhiko Hirose, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Feb. 14, 1973, Ser. No. 332,301
Claims priority, application Japan, Feb. 17, 1972, 47/16691
Int. Cl. B67d *5/30*
U.S. Cl. 222—26 **6 Claims**



A fuel supplying apparatus comprises a fuel supplying hose pipe adapted to be extended downward from a take-up reel disposed above a fueling service area for fueling vehicles, a first indicator provided on the hose pipe, a second indicator installed on a structure such as a building part, means for measuring the quantity of fuel supplied and transmitting the measured result as an electrical signal to the first and second indicators, and means for mechanically zero-resetting the indication of the first indicator and electrically zero-resetting the indication of the second indicator.

3,797,704

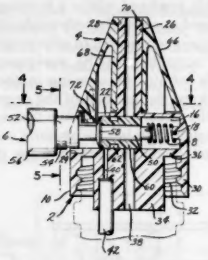
SAFETY CLOSURE

Dewey B. Dykes, Ballwin, Mo., assignor to Conserv Resources Inc., Ballwin, Mo.

Filed Oct. 17, 1972, Ser. No. 298,254
Int. Cl. B67d *5/22*
U.S. Cl. 222—41 **4 Claims**

A safety closure for a liquid container has a base provided with a dispensing channel which is opened and closed by a

spool-type valve element movable axially in the base. A rotatable cover locks the valve element in its closed position.



Both the valve element and cover must be turned to prescribed angular positions before the valve element can be moved axially to its open position.

3,797,705

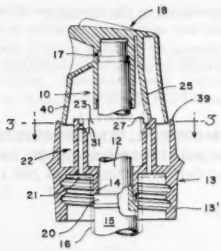
LOCKING MEANS FOR SHIPPER TYPE LIQUID DISPENSERS

Rex C. Cooprider, Hacienda Heights, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed May 2, 1973, Ser. No. 356,370

Int. Cl. B65d *47/34, 83/14*

U.S. Cl. 222—153 **14 Claims**



The actuator of the dispensing device which is movable through an opening in the closure cap of the container is provided with a generally stiff radially deflectible locking finger extending in the direction of the actuator movement with its free end adapted for radial deflection into and from an operative position in which the free end is in abutting engagement with the upper axial end of the annular abutment. In the released or inoperative position, the finger extends and is freely movable in a space provided between the actuator and the annular abutment which encircles it. Cooperating cam means on the finger and the abutment are operative in one direction of rotation of the actuator to urge the free end of the finger radially outwardly to locking position and are operative in the reverse direction of rotation of the actuator to urge the fingers radially inwardly toward released position.

3,797,706

PAINT AND ADHESIVE APPLICATOR

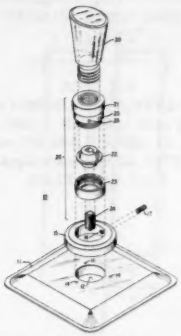
Leonard C. Mule, Garfield, N.J., assignor to Charles Fisher, Fairlawn; Peter J. Cossman, Denville and Linda Rembish, Lake Stockholm, all of, N.J.

Filed May 8, 1972, Ser. No. 251,322

Int. Cl. B67d *3/00*

U.S. Cl. 222—187 **6 Claims**

An applicator for applying paints or adhesives to a surface in various width stripes includes a guide member and a dispensing element. Different width stripes are obtained by positioning the external surfaces of the dispensing element in



predetermined spatial relationships relative to the edges of the guide member.

3,797,707

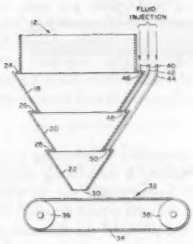
BINS FOR STORAGE AND FLOW OF BULK SOLIDS

Andrew W. Jenike, Winchester, and Jerry R. Johanson, Chelmsford, both of Mass., assignors to Jenike and Johanson, Inc., Burlington, Mass.

Filed Apr. 20, 1971, Ser. No. 135,584

Int. Cl. B65d *83/06*

U.S. Cl. 222—193 **3 Claims**



Bins for storage and flow of bulk solids have stepped hopper surfaces adapted to increase and render constant the rate of flow at the hopper outlet. The stepped surfaces have friction and slope angles adapted to satisfy the criteria for mass flow, and provide spaces for injecting fluid at one or more perimetric interfaces with the moving solids.

3,797,708

DISPENSER FOR DISCHARGING A QUANTITY OF A SUBSTANCE INTO A CONDUIT

Bobhumil Sypal, Highview Crescent 48, Toronto 4, Canada

Filed Oct. 20, 1972, Ser. No. 299,396

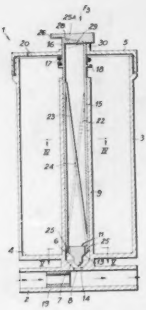
Claims priority, application Belgium, Oct. 29, 1971, 774665

Int. Cl. B05b *7/28*

U.S. Cl. 222—193 **4 Claims**

The invention pertains to a dispenser by means of which a given quantity of a substance can be discharged into a conduit

wherein flows a fluid, said dispenser including a container having a discharge outlet, a connection between said outlet and



said conduit, releasable closure means for said outlet and a neck within said conduit close to said connection.

3,797,709

VOLUMETRIC METERING APPARATUS

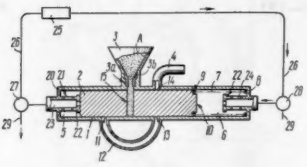
Anatoly Ivanovich, Bratislavskaya ulitsa 26, kv. 22, Zverev, Kiev, U.S.S.R.

Filed July 12, 1972, Ser. No. 271,189

Claims priority, application U.S.S.R., July 12, 1971, 1675700

Int. Cl. B67d *5/54*

U.S. Cl. 222—194 **5 Claims**



An apparatus is disclosed comprising a cylindrical body housing a plunger having a measuring space which, as the plunger is moved by compressed gas, in one of its extreme positions communicates with a feed hopper, while in the other extreme position of the plunger, the measuring space communicates simultaneously with a discharge standpipe and a plenum space in the body in order that the metered material may be blown out of the measuring space by compressed gas.

3,797,710

MACHINE FOR DISPENSING SHAPED AND PORTIONED CHARGES OF A FOOD PRODUCT

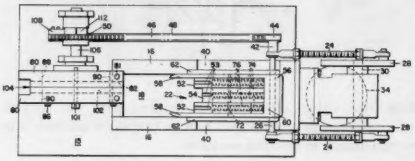
Arnold Soodalter, 134 Tanglewood Dr., Longmeadow, Mass.

Continuation-in-part of Ser. No. 222,559, Feb. 1, 1972. This application Oct. 25, 1972, Ser. No. 300,804

Int. Cl. G01f *11/04*

U.S. Cl. 222—219 **9 Claims**

Apparatus for the in seriatim dispensing of shaped and portioned charges of a moldable food product comprising a supply section including a hopper and an interconnecting charging chamber for the containment of the food preliminary to shaping and portioning, a pressure section for pressurizing the food within the chamber preparatory to and during the loading thereof into a metering section, the pressure section including primary and secondary pushers horizontally-reciprocable within the charging chamber toward and away from the metering section in compressing and relieving strokes respectively, the metering section including a charge-shaping drum rotatably confined within a housing and having a diametrically-disposed opening therethrough defining a pair of aligned radially-arranged pockets of alternately increasing and decreasing size according to the movement of a plug limitedly-reciprocable within the opening in the area intermediate the two pockets, the pockets of the drum each communicating through the housing in seriatim first as a receiving pocket with the charging chamber for shaping and measuring a charge of the food loaded thereinto from the charging



chamber responsively to the motivation of the pushers and second as a dispensing pocket with atmosphere for dispensing the shaped and portioned charge from the metering section into a suitable receiving means, with the compressing stroke of the pushers maintaining a tension on the food during loading into the receiving pocket and therefollowing during a momentary dwell period as rotation of the drum out of register with the charging chamber is initiated following which the pushers are retracted in relieving stroke as the food charged pocket is completely encapsulated by the cooperant drum and plug and housing is rotated into dispensing position as effected by the loading of the second-to-be-filled pocket and the resultant limited sliding movement of the plug within the drum opening.

3,797,711

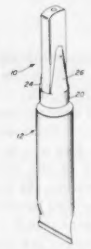
DEVICE FOR METERING TOOTHPASTE OR THE LIKE

William R. Bowerman, 1824 Mississippi St., Lawrence, Kans.

Filed Oct. 24, 1972, Ser. No. 300,116

Int. Cl. B67d *3/00*

U.S. Cl. 222—219 **2 Claims**



A metering device is provided for attachment to or as an integral part of the cap end of a tube of toothpaste or the like. The device comprises a cylinder open at both ends and a piston mounted for limited reciprocation within the cylinder. A bracket supports the cylinder for angular movement about an axis perpendicular to its long axis. The bracket is provided with a tapped passage which receives the threaded neck of the toothpaste tube and is adapted to communicate with either open end of the cylinder. Toothpaste discharged from the tube into one end of the cylinder will push the piston and any paste within the other end of the cylinder out through the opposite end of the cylinder in a metered amount and the piston closes off the end of the cylinder from air. The device is then rotated 180° for the next dispensing operation.

3,797,712

COMPOUND BODY NOZZLE FOR A CONTAINER HOLDING A LIQUID MELT

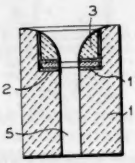
Hans-Joachim Kutzer, Wiesbaden-Rambach; Wolfgang Weinreich, Paderborn; Lothar Harmsen, Schloss Neuhaus, and Gerd D. Fricke, Paderborn, all of Germany, assignors to Didier-Werke AG, Wiesbaden, Germany

Filed Apr. 7, 1971, Ser. No. 132,134

Claims priority, application Germany, Apr. 23, 1970, 2019541

Int. Cl. B22d 37/00

U.S. Cl. 222—566 6 Claims



A container for a liquid melt has a nozzle with a flow passage. A refractory ceramic material supports the nozzle and an insert of highly wear resistant refractory material limits the flow passage of the nozzle. The insert comprises a shield body or bodies of oxide ceramic or cermet having a thickness of 5% to 20% of the diameter of the flow passage. The flow passage of the shield body is the same or less than the flow passage of the nozzle.

3,797,713

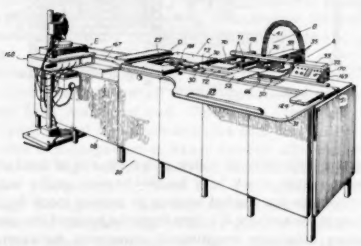
PACKAGING APPARATUS AND METHOD

Burmah D. Lawing, Charlotte, and Carol Dean Rankin, Lowell, both of N.C., assignors to Speizman Industries, Inc., Charlotte, N.C.

Division of Ser. No. 139,165, April 30, 1971, Pat. No. 3,742,676. This application Dec. 4, 1972, Ser. No. 312,044

Int. Cl. A41h 33/00

U.S. Cl. 223—37 17 Claims



An apparatus and method for packaging hosiery in an automatic operation that sequentially folds the hosiery about an insert board, places the folded hosiery on an L-board, bags the L-board mounted hosiery, and seals the bags, with the hosiery advancing in a continuous lengthwise direction to and through the various operating stations. Hosiery is initially laid out lengthwise at a folding station at which the hosiery is partially folded automatically, with folding being completed as the hosiery advances lengthwise to a preliminary packaging station at which the folded hosiery advances onto an L-board and against the upstanding end flap thereof. The L-board mounted hosiery is advanced to a bagging station at which it is inserted lengthwise into a bag that is gripped to hold it stationary during hosiery insertion and is then ungripped to allow the bagged hosiery to advance to a bag closing station at which it advances against a stop that causes the hosiery to fully seat in the bag and positions the bag properly for sealing. After the bag is sealed it is turned over lengthwise by oscillation of a turning plate on which the bagged hosiery is received at the bag closing station, from which the bagged hosiery is removed after turning.

3,797,714

METHOD OF FORMING A RUFFLE OR THE LIKE

Dolores Cotugno, 3305 N. Ridgeway Ave., Chicago, Ill.

Division of Ser. No. 884,273, Dec. 11, 1969, Pat. No. 3,674,187. This application Apr. 21, 1972, Ser. No. 246,234

Int. Cl. A41h 43/00

U.S. Cl. 223—46 7 Claims

A device for making ruffles, tufts, pompons or the like from such materials as cloth net, crepe paper, or tissue. The device has means adapted to be grasped by hand, means for supporting said material on which the material may be gathered, and means for temporarily retaining a fastening means. The device is adapted to be used in a method including the steps of placing the material over the supporting means of the device, gathering together the material thereon, passing the device through the gathered material until the fastening means extends through the material, and manipulating the fastening means so that the gathered material is held in its gathered condition and may be formed into the desired ruffle or the like.

3,797,715

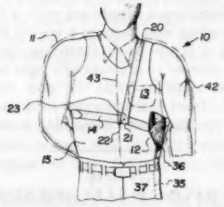
NOVEL HOLSTER AND HARNESS

Sebastian R. Sciaidone, 14 Winston Pl., Yonkers, N.Y.

Filed Feb. 23, 1972, Ser. No. 228,570

Int. Cl. F41c 9/00

U.S. Cl. 224—2 B 14 Claims



A concealable holster and harness may be worn under a shirt comfortably concealing a weapon in a holster which is easily accessible and avoids normal discomforts of continual wearing of a harness, holster and a weapon.

3,797,716

WATCH BAND

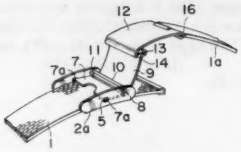
Kazunori Mochizuki, Tokyo, Japan, assignor to Mochizuki Manufacturing Company, Ltd., Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,431

Claims priority, application Japan, Oct. 24, 1970, 45-106001; Oct. 24, 1970, 45-106002

Int. Cl. A44c *11/02*

U.S. Cl. 224—4 D 2 Claims



A watch band comprising a band element or elements adapted to carry a watch and present opposite free ends, and a clamp pivotally connected with one end of said free ends and adapted to removably receive the other of said free ends, wherein said clamp is of a type including two hinged plate elements adapted to be folded or unfolded for fitting the band around the wrist or releasing the band from the wrist, wherein said other free end of said band element is freely movable relatively to said clamp when said two hinged plate elements are unfolded and is firmly caught by said clamp at any desired position relative to said clamp when said two hinged plate elements are folded.

3,797,717

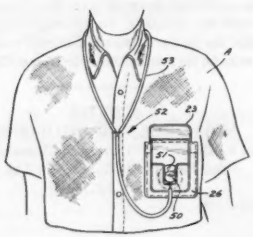
STETHOSCOPE RECEPTACLE

Ronald J. Collins, 1608 Independence Ave. North, Golden Valley, Minn.

Filed May 9, 1972, Ser. No. 251,688

Int. Cl. A45c *11/00*

U.S. Cl. 224—5 H 1 Claim



A receptacle to receive and retain therein the chest piece of a stethoscope comprising a supporting wall, a front wall carried by said supporting wall forming a pocket therewith, said front wall having a downwardly extending open ended slot therein centrally thereof, a substantially rigid bendable plate member adjacent edge portions of said slot and being laminated into said front wall and a rearward plate-like hanger carried by said supporting wall for insertion as into a pocket.

3,797,718

PACK FRAME HAVING PULLEY ADJUSTING STRAPS

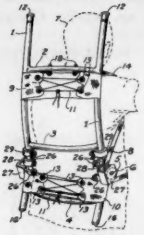
Roland Plant, 17 Pearl St., Manchester, Conn.

Filed Nov. 20, 1972, Ser. No. 308,244

Int. Cl. A45f *3/10*

U.S. Cl. 224—25 A 8 Claims

This invention is concerned with a strap and pulley assembly mounted on a back pack frame. A back pack frame is a device that hikers employ to carry a load of supplies and/or equipment on their back. On the lower side of each of the frame members are mounted pulley assemblies. The straps that connect the frame to the person pass through the pulley assemblies and fasten to the front of the person's body. With this invention, the weight on the pack is no longer carried solely on the back and shoulders, but the weight is more evenly distributed to other parts of the body. The pulleys have means for locating them in order to conform to the person's configuration. There is a separate bracket for locking the pulley means into fixed positions.



3,797,719

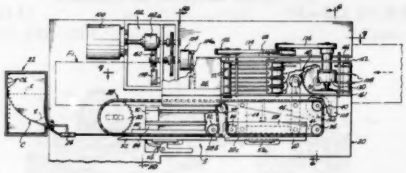
APPARATUS FOR BURSTING SECTIONALIZED ELONGATED STRIPS

Leonard H. Tall, 6308 S.E. 22nd St., Mercer Island, Wash.; Paul A. Catlstedt, 9055 Phinney Ave. North, Seattle, Wash., and Arlen J. Erickson, 211 N.W. 62nd St., Seattle, Wash.

Division of Ser. No. 133,885, April 14, 1971. This application Dec. 6, 1972, Ser. No. 312,714

Int. Cl. B65h *35/10*

U.S. Cl. 225—100 2 Claims



A bursting apparatus in which a first stretch of feed chain advances a carrier stock to a loading station and a second stretch advances the loaded section of carrier stock beyond the loading station where it is torn from the body of the carrier by effecting relatively longitudinal movement between the chain stretches preferably along a preformed score line. Positive engagement of pins on the feed chain with holes in the carrier stock permits feeding and tearing off the sections successively.

3,797,720

NUMERICALLY CONTROLLED WORK TRANSPORT FOR FORMING PRESS

Walter R. Gaudion, Reading, Mass., assignor to Ambrit, Inc., Wilmington, Mass.

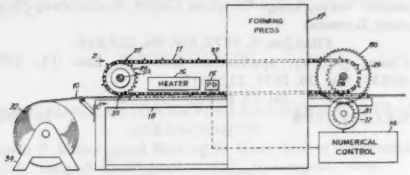
Filed Aug. 1, 1972, Ser. No. 277,091

Int. Cl. B65h *23/18*

U.S. Cl. 226—33 4 Claims

A press for forming preprinted plastic shapes at high speed from a plastic web transported by a feedback controlled

hydraulic motor in which a registration mark relative to the preprinted design is detected and the hydraulic motor is

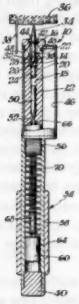


driven to a controlled stop at the press position in accordance with a ramp and count in a numerical control device.

3,797,721
EXPLOSIVE ACTUATED TOOL FOR DRIVING FASTENING STUD

Thomas E. Clumb, 5505 N. Illinois St., Indianapolis, Ind.

Filed July 20, 1972, Ser. No. 273,506
Int. Cl. B25c *1/10*
U.S. Cl. 227—9 **8 Claims**



Explosive actuated tool for driving element by explosive charge comprises barrel having bore therein for positioning element to be driven by tool. Muzzle is provided at one end of barrel, and explosion chamber communicates with bore for receiving percussion ignitable explosive charge whereby when explosive charge is ignited element positioned within bore is driven from muzzle of tool. Closed gas expansion chamber surrounds barrel and communicates with bore solely through plurality of passageways in barrel directly adjacent muzzle of tool so that high velocity gases produced upon ignition of explosive charge are directed into gas expansion chamber through passageways. Gas expansion chamber functions to receive and dissipate high velocity gases to thereby provide relatively silent operation of tool. Ejection structure associated with explosion chamber removes any spent explosive charges that remain after ignition.

3,797,722
APPARATUS FOR DISPENSING FASTENERS

Arnold Roberts Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 169,413, Aug. 5, 1971, Pat. No. 3,759,435. This application July 28, 1972, Ser. No. 276,118
Int. Cl. B25c *1/00*
U.S. Cl. 227—67 **2 Claims**

Apparatus for dispensing fastener attachment members of the type having a filament with heads on both ends, the device including a casing, a needle projecting from the casing, the needle having a bore through which the fastener attachment member is adapted to be dispensed, a plunger or ejector adapted to force one head of the attachment member through the needle bore, the plunger advanced by the combination of a gear and sliding rack, the sliding rack in the form of a thin

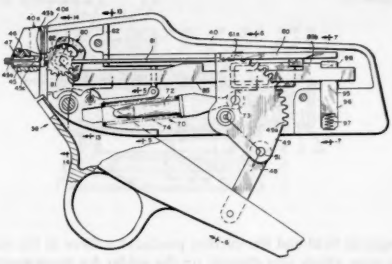
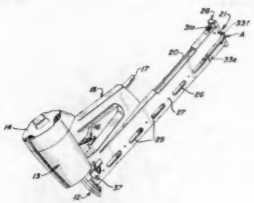


plate and in which the attachment members are fed before the needle and in front of the ejector by an indexing wheel advanced by a feed pawl with a slotted hole which allows it to rock in and out of engagement with the indexing wheel as it is moved back and forth.

3,797,723
FASTENER-DRIVING TOOL

Garry R. Perkins, Palatine, and James K. Goode, Jr., Cary, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Feb. 7, 1972, Ser. No. 224,113
Int. Cl. B25c *1/00*
U.S. Cl. 227—109 **5 Claims**



A powered fastener-driving tool is provided which includes a housing in which a driving piston is mounted for reciprocatory movement, and a fastener magazine extending laterally from said housing. The housing and magazine are of unitary construction. A nose section depends from the housing and is connected to one end of the magazine. The nose section is provided with a chamber into which fasteners are successively fed from the magazine. A fastener feed assembly is mounted on the magazine and is adapted to automatically feed the fasteners from the magazine to the chamber.

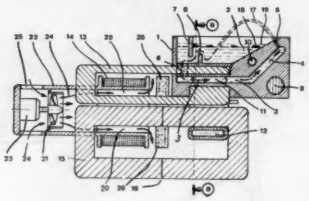
3,797,724
SOLDERING APPLIANCE

Karl Flury, Dietikon, and Rolf Zitt, Dubendorf, both of Switzerland, assignors to Kurt Schleumiger, Nennigkofen, Switzerland

Filed Oct. 18, 1971, Ser. No. 190,241
Claims priority, application Switzerland, Oct. 20, 1970, 15442/70; Oct. 27, 1970, 15921/70; Sept. 6, 1971, 13065/71
Int. Cl. B23k *1/08*
U.S. Cl. 228—37 **23 Claims**

The disclosure relates to a soldering apparatus including a solder receptacle in communication with a pumping zone. A

field magnet generates a magnetic field within a pumping zone while a current feed is passed through solder transversely the direction of the magnetic field. The combined action of the



magnetic field and the current produces a force in the pumping zone which acts directly on the solder for movement in a given direction. The present apparatus is especially useful for trouble-free soldering of printed circuit boards.

3,797,725

AUTOMATIC SOLDERING MACHINE

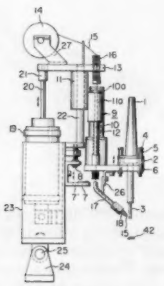
Yubi Mori, Osaka, and Morihiro Hanakura, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaku-fu, Japan

Filed Apr. 11, 1972, Ser. No. 242,921

Claims priority, application Japan, Apr. 14, 1971, 46-24149; Apr. 14, 1971, 46-24150; Apr. 14, 1971, 46-24151

Int. Cl. B23k *1/00*

U.S. Cl. 228—41 **11 Claims**



An automatic soldering machine is provided in which a solder wire feeding device comprises an outer cylinder and an inner cylinder coaxially slidably fitted therein for reciprocal motion, and a solder wire passes along the axes of the outer and inner cylinders. In the upper portion of the inner cylinder and in the lower portion of the outer cylinder are disposed solder wire clamping mechanisms in each of which a plurality of balls are so arranged as to be forced to move toward the solder wire surrounded by the balls thereby clamping the solder wire when the latter is moved in the direction opposite to the solder wire feed direction and to move away from the solder wire to release it when it is moved in the feed direction. When the inner cylinder is vertically reciprocated in unison with a solder wire supply reel, the solder wire is automatically and intermittently fed by a predetermined length under the cooperation of said two clamping mechanisms.

3,797,726

CONTAINER FOR LIQUIDS WITH AN OPENABLE POURING SPOUT

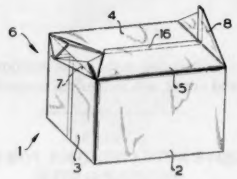
Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Altstadter Vorpackungs-Vertriebs GmbH, Buchnerweg-Pfungstadt, Germany

Filed Jan. 6, 1972, Ser. No. 215,841

Claims priority, application Germany, Jan. 11, 1971, 2100937; Apr. 29, 1971, 2121019

Int. Cl. B65d *5/72, 5/02*

U.S. Cl. 229—17 R **16 Claims**



In a container for liquids a sealed connecting edge strip is provided in the top of the container and the edge strip can be opened to form a pouring spout. The connecting edge strip is formed by a pair of edge strips sealed together along a connecting seam spaced inwardly from the free edges of the edge strips. To facilitate opening the spout, a cut is formed in the connecting edge strip from its free edge toward the connecting seam with the cut extending obliquely of the connecting seam. The cut can extend through one or both of the edge strips. In one embodiment a perforated line extends alongside the connecting seam in one of the edge strips on the opposite side of the connecting seam from the free edge of the edge strip. The pouring spout is openable along the perforated line by pulling up on the connecting strip from the location of the cut toward the end of the connecting strip which forms the end of the pouring spout. In a second embodiment the cut is formed through both of the edge strips and an additional perforated line is provided in the other edge strip commencing at the obliquely arranged cut.

Further, in the second embodiment a cut line is provided in the outer surface of the one of the edge strips and it is spaced from and extends along the perforated line in that strip and, preferably, the cut line is located on the opposite side of the perforated line from the connecting seam.

3,797,727

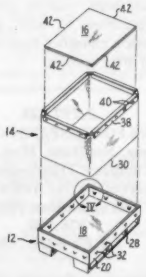
COLLAPSIBLE CONTAINER AND ASSEMBLY METHOD THEREFOR

Benjamin A. Downing, Peoria; Earl B. Johnson, Morton, and Richard E. McClain, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 10, 1972, Ser. No. 233,553

Int. Cl. B65d *13/00*

U.S. Cl. 229—23 A **13 Claims**



A collapsible container comprises a horizontally disposed pallet assembly having upstanding sidewalls releasably at-

tached thereto by a plurality of perimetrically oriented barbs to define an open top storage compartment. Upon assembly, a flat bottom sheet is closely fitted within the sidewalls to urge them outwardly into locking engagement with the barbs. Reinforcement rails are also attached to top edges of the sidewalls by barbs.

3,797,728

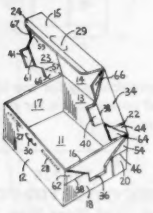
TOP-OPENING CARTON HAVING AN UNIQUE END FLAP ARRANGEMENT

Kenneth T. Buttery, and Richard G. Haas, both of Parchment, Mich., assignors to Brown Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 139,657, May 3, 1971, Pat. No. 3,734,390. This application Jan. 3, 1972, Ser. No. 214,707

Int. Cl. B65d *5/22*

U.S. Cl. 229—36 **10 Claims**



A top-opening, rectangular paperboard carton including top, bottom, front wall, rear wall, and end walls, together defining an enclosure and provided with an unique end flap arrangement which facilitates opening and reclosure of the carton.

3,797,729

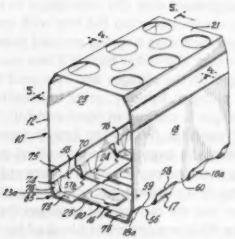
BOTTLE CARRIER

George S. Holmes, Waldwick, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Oct. 29, 1970, Ser. No. 85,009

Int. Cl. B65d *5/02, 71/00*

U.S. Cl. 229—40 **8 Claims**



A wraparound bottle carrier provided with heel opening reinforcing means. The carrier including a bottom wall having interlocked inner and outer closure panels and side walls having heel openings at the base thereof. The reinforcing means being folded terminal portions of the inner and outer closure panels overlying the bottom wall and the adjoining portions of the side walls.

3,797,730

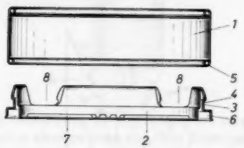
TWO PART BOX

Ella Zach, deceased, late of Ravensburg, Germany (by Gunther Zach, legal representative), assignor to Ludwig Zach Verpackungen, Ravensburg, Germany

Filed May 18, 1971, Ser. No. 144,493

Int. Cl. B65d *1/26, 41/18, 43/10*

U.S. Cl. 229—43 **6 Claims**



This invention relates to a two part box, particularly for holding cheese, comprising a base formed of a synthetic plastics material and having a bottom and a resilient peripheral side-wall, and closure means to close said base, said closure means comprising a lid formed of cardboard or like material and having a cover sheet with a stretchable wall extending therefrom, whereby the lid can be retained firmly on said base by interengagement between the wall of said lid and the sidewall of said base.

3,797,731

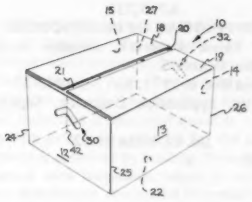
CARTON WITH IMPROVED HAND HOLES

Howard L. Weldon, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Filed July 14, 1972, Ser. No. 271,658

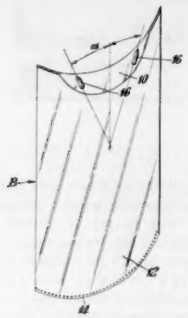
Int. Cl. B65d *5/46*

U.S. Cl. 229—52 B **8 Claims**



A carton with improved hand holes for facilitating lifting the carton, the hand holes being unusually resistant to tearing when the carton is lifted. In one aspect of the invention, the improved hand holes take the form of inverted V cutouts located on opposed sidewall panels of the carton. In another aspect of the invention, the improved hand holes take the form of at least one inclined, elongated, slot-shaped cutout located on each of two opposed sidewall panels of the carton. In both aspects of the invention, a longitudinal axis of the inclined cutout will intersect the plane of a bottom closure means for the carton at an acute angle measured between the extended longitudinal axis and the plane. Also in both aspects of the invention, the improvement in tear resistance results from distributing the lifting force as both a vertical and a horizontal load in the carton sidewall and from increasing the area of the carton over which the load or lifting force is distributed. Furthermore, in both aspects of the invention, the hand holes may be provided with flaps to keep them closed when not in use.

3,797,732
PLASTIC BAG HAVING ELONGATE APERTURES ANGULARLY DISPOSED
Martin J. Melin, Chicago, and Rodney L. Wallace, Brookfield, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,296
Int. Cl. B65d 33/00, 33/14
U.S. Cl. 229—53 8 Claims

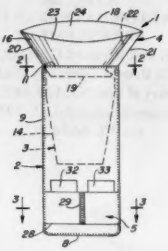


The rear wall of a bag for packaging food, particularly meat, which is remote from the closed end of the bag is provided with elongated apertures angularly disposed with respect to the longitudinal axis of the bag and to each other for mounting a stack of bags on a wicket.

3,797,733
SHOPPING BAG OF PLASTIC FOIL
Werner Ibing, Vejen, Denmark, assignor to A/S Rolles Fabriken, Vejen, Denmark
Filed Dec. 6, 1971, Ser. No. 204,923
Claims priority, application Denmark, Sept. 24, 1970, 4889/70
Int. Cl. B65d 33/02
U.S. Cl. 229—55 3 Claims

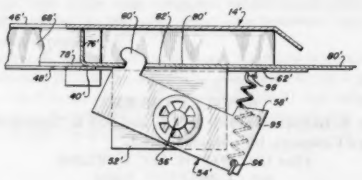
A shopping bag of plastic foil which in flattened condition is substantially rectangular having a rectilinear mouth at which hand grip means are provided. Spaced from the mouth edge and parallel with said edge one or more reinforcing lists are mounted to the bag side. Each of the lists consists of a strip having a profiled cross-section with a total thickness which is several times larger than the wall thickness of the strip.

3,797,734
DISPOSABLE BAGS
Richard L. Fleury, 5818 S. Massasoit, Chicago, Ill., and Donald E. Etes, Crystal Lake, Ill., assignors to said Fleury, by said Etes
Filed Feb. 4, 1972, Ser. No. 223,579
Int. Cl. B65d 31/14
U.S. Cl. 229—62.5 6 Claims



A collapsible, disposable bag for use in sick-rooms, and the like, having a valved construction for preventing reverse flow of material therefrom.

3,797,735
LOCKING COVER FOR COIN BOX
August M. Sciortino, 1838 Weeg Way, Park Ridge, Ill., and Charles R. Rissmann, Skokie, Ill., assignors to said Sciortiano, by said Rissmann
Filed Aug. 2, 1972, Ser. No. 277,245
Int. Cl. G07b 15/00
U.S. Cl. 232—16 15 Claims



Locking coin box to be inserted into a coin-controlled vending machine in alignment with the coin chute to receive coins. The box has a cover locked onto the box with openings and a trigger mechanism including a spring pressed plunger movable to block the openings, the cover having a two position rocking latch cooperating with the plunger and operated by a rearward extension of the plunger. Initially, prior to installation into the machine, the plunger is cocked in open condition by the latch being in its first position. When the box is inserted into the machine, the extension engages a rear wall of the recess into which the box is inserted moves slightly forward and releases the latch from the first position uncocking the plunger to permit its movement but the movement requires the extension to move rearwardly. This movement is blocked by the rear wall. The latch cannot move into its second position so long as the box is in the recess of the machine. When the machine is serviced and the box, now containing coins, is removed, the extension is permitted to move rearwardly. This is done while the box is being withdrawn and without control or access by the serviceman. At the completion of movement, which occurs while the box is still substantially within the recess, the rocking latch is moved into its second position, locking the plunger into blocking position. The box can be unlocked by the proprietor of the machine. The proprietor unlocks the

cover, removes the same, empties the box, releases the latch from its second position, pushes the plunger forward, manipulates the latch to its first or cocked position, returns the cover onto the box and locks it in place. The box can now be reinstalled in another machine by the serviceman.

3,797,736

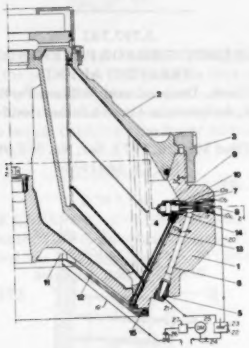
METHOD AND APPARATUS FOR CONTROLLING THE CONCENTRATION FACTOR OF A DISCHARGE

Hubert Gunnewig, Oelde, Germany, assignor to Westfalia Separator AG, Oelde/Westf., Germany

Filed Apr. 7, 1972, Ser. No. 241,945

Int. Cl. B04b

U.S. Cl. 233—20 R **11 Claims**



A centrifugal separator having a drum with concentrate discharge nozzles disposed at a shorter distance from the axis of rotation than the outer periphery of the separating chamber. The drum is provided with auxiliary discharge nozzles or bores disposed at the outer periphery of the separating chamber and leading radially outward. Valves are provided for the auxiliary discharge nozzles for closing and opening thereof in accordance with need for discharge of concentrate in excess of that discharged from the first-mentioned nozzles, and control means are provided for controlling the operation of the auxiliary nozzles in accordance with said need.

3,797,737

HIGH-SPEED ROTATION DRUM FOR USE WITH A CENTRIFUGAL SEPARATOR FOR GASEOUS MIXTURE

Kenzo Kadotani; Tokio Isogai; Yasushi Miyano, all of Hitachi, and Katsuhito Suzuki, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

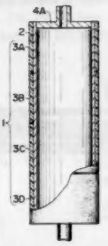
Filed Sept. 10, 1971, Ser. No. 179,458

Claims priority, application Japan, Sept. 11, 1970, 45-79291

Int. Cl. B04b *1/00, 3/00*

U.S. Cl. 233—27 **11 Claims**

A drum structure adapted to be rotated at a high-speed for the centrifugal separation of gaseous mixture. The drum is of a composite structure comprising a first drum part and a second drum part disposed on the outer periphery of the first drum part. The latter is made of a metal which is resistant to the corrosion by the gaseous mixture while the second drum part is made of a plastic material reinforced with a large number of fibers wound and extending circumferentially. The second



drum part is composed of a plurality of ring-like members each of which is shorter than the first drum part whereby the manufacture of the drum is simplified.

3,797,738

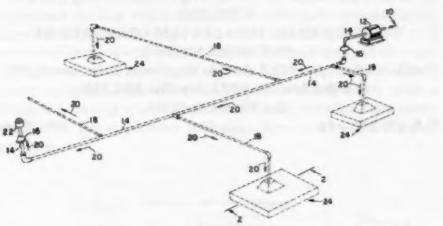
CONTROLLED WATER DISTRIBUTION SYSTEM AND METHODS

Davis Fitzhugh, Raspberry Ln., Augusta, Ark.

Filed Nov. 2, 1972, Ser. No. 302,996

Int. Cl. B05b *17/00;* **B44d** *1/08*

U.S. Cl. 239—1 **11 Claims**



Methods and apparatus are provided for sub-surface irrigation of areas of land of differing sizes, and in a manner in which small controlled amounts of water can be expelled more or less continuously into the soil over a relatively large area, along a supply line, for effective irrigation simultaneously with a substantial reduction in the total quantity of water used in comparison with prior arrangements for the same amount of land. The above is achieved by feeding through the supply line to one or more wick manifolds, which in turn continuously supply water distributors comprised essentially of a relatively hydrophillic substance which serve to absorb, hold and distribute the water supply in a slow, continuous manner to the soil being irrigated. In addition, provision is made for distributing a reasonably uniform quantity of water at a variety of points along the system, regardless of the terrain of the land being irrigated and in the absence of expensive land leveling procedures. The methods and apparatus herein are especially useful in relatively arid areas because the controlled distribution achieved limits the quantity of water needed for effective irrigation.

3,797,739

METHOD FOR ELECTROSTATICALLY DEPOSITING A FLUID

Philip L. Cowan, Basking Ridge, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Division of Ser. No. 35,145, May 6, 1970, Pat. No. 3,693,877.

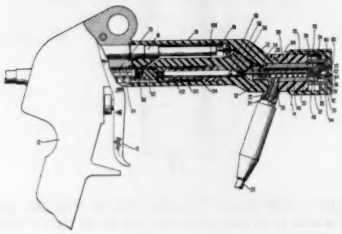
This application July 11, 1972, Ser. No. 270,721

Int. Cl. B05b *5/02*

U.S. Cl. 239—3 **5 Claims**

Improved methods and apparatus for charging atomized coating materials and maintaining an electrostatic depositing

field in the electrostatic deposition of coating materials. Improved charging is effected by the selectively directed passage of corona discharge current from a primary source thereof



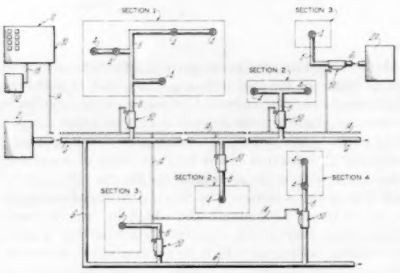
through emitted coating material intermediate its point of emission and its locus of atomization to an electrically floating electrode element whose collection potential is maintained by a corona discharge emanating from an exposed end thereof.

3,797,740

FLUID DISTRIBUTION SYSTEM OPERATED BY PRESSURE SIGNAL

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla.

Filed Jan. 24, 1972, Ser. No. 220,358
Int. Cl. B05b *17/04*
U.S. Cl. 239—11 **19 Claims**



A sprinkler system has a plurality of sprinklers connected to a main water supply. A control system includes main flow control valve units for controlling water flow to said sprinklers, said valve units being controlled by pressure signals of predetermined values from a pressure signal control means. Each valve unit includes a manually actuated valve and a pressure actuated valve.

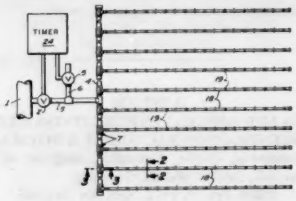
3,797,741

INTERMITTENT IRRIGATION SYSTEM

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.

Filed Jan. 18, 1973, Ser. No. 324,589
Int. Cl. B05b *1/30*
U.S. Cl. 239—11 **17 Claims**

An irrigation system having a plurality of emitter openings, each dimensioned to discharge water at a rate in excess of that required for drip or trickle irrigation, and a control means which permits intermittent flow for short intervals from the emitters to the effect that during the irrigation period the



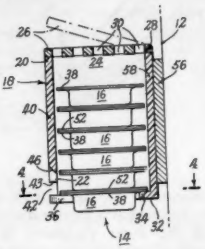
average flow corresponds to the continuous flow rate from a drip irrigation system.

3,797,742

CONTAINER DISPENSER FOR PACKETS OF SOLID AIR TREATING AGENT

Charles W. Clark, Dumont, and William Perlberg, Wyckoff, both of N.J., assignors to Airwick Industries, Inc., Teterboro, N.J.

Filed May 30, 1973, Ser. No. 365,089
Int. Cl. A61l *9/04*
U.S. Cl. 239—57 **16 Claims**



An air-treating device is disclosed in which a plurality of sealed packets containing a solid air-treating agent is supported in a hollow container having at least one opening through which individual packets are inserted or removed from the container. The individual sealed packets each have a removable wall portion or cover for exposing the air-treating agent contained therein, so that individual packets, stored in the container, can be selectively removed from the container and opened to expose the air-treating agent therein. The opened packets can then be replaced in the container, adjacent the opening therein, for support and storage in the container while the vapors from the solid air-treating agent in the opened packet escape from the container into the surrounding atmosphere.

3,797,743

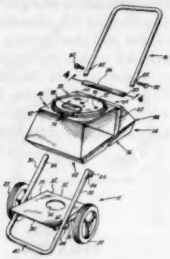
UTILITY SPRAYER UNIT

William J. Kommers, Sioux City, Iowa, and Clarence E. Stewart, South Sioux City, Nebr., assignors to The Broyhill Co., Dakota City, Nebr.

Filed July 26, 1973, Ser. No. 382,674
Int. Cl. B05b *9/02*
U.S. Cl. 239—148 **12 Claims**

A corrosion resistant molded polyethylene tank for lawn and garden sprayable solutions is mounted to a manually propelled wheeled cart by a corrosion free attachment ar-

rangement. Opposed sides of the tank are provided with relatively deep angled grooves or tracks engageable with and slidable on opposed, rearwardly extending and upwardly inclined frame components on the cart so that the tank can only be mounted from the rear of the cart with proper registration therewith assured. A removable stop between the frame components at the rear of the tank prevents tank displacement from the cart. A power spray mechanism is mounted to a support cover on the tank or, in a second embodiment, to a separate engine mount carried by the frame and seated against the stop.



3,797,744

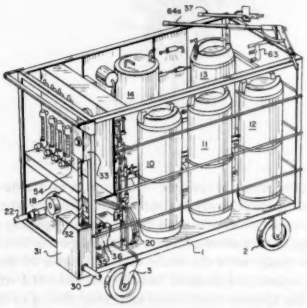
PORTABLE CLEANING AND SANITIZING SYSTEM

Ward Harris Smith, 3142 S. Josephine, Denver, Colo.

Filed Nov. 20, 1972, Ser. No. 307,856

Int. Cl. B08b *13/00*

U.S. Cl. 239—172 **10 Claims**



A wheeled frame, supporting a series of chemical tanks connected to the manifold, which includes a high pressure pump for a high pressure, low volume, or low pressure, high volume, cleaning and sanitizing capability. It has a metered and controlled selected chemical injection produced by a high pressure proportioning pump downstream of the high pressure water pump which pumps chemicals from the chemical tanks into the pressurized fluid stream. An additional capability is a metered and controlled oil injection into a high pressure air stream, which also has a drying capacity when oil is not metered into the system. The unit requires connections for electrical, power, and air which are locally available in the areas to be cleaned. Cleaning and sanitizing may be readily achieved by use of a detergent foam, then a high or low pressure chemical wash and followed by a sterilizing solution, and then by a clear-water low pressure rinse, all of which is followed by an oiling of clean equipment. Quick disconnect service terminals provide fast and easy set-up and take-down of the unit.

3,797,745

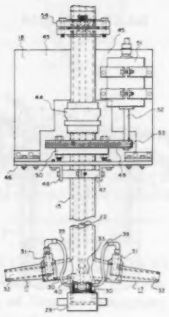
APPARATUS FOR SPRAYING REFRACTORY LINING

Jan F. Haus, 1861 Stage Court Dr., Allison Park, Pa.

Filed Jan. 24, 1973, Ser. No. 326,423

Int. Cl. B05b *3/00*

U.S. Cl. 239—227 **4 Claims**



A lining gun for spraying refractory lining on the interior of ladles and the like which includes two elongate concentrically disposed conduits through which dry refractory material and water are respectively passed at one end and sprayed through mixing nozzles at the opposite end. Each conduit includes a rotary coupling immediate its length and cooperates with a motor driven ring and pinion assembly which rotates the lower portion of the apparatus including the nozzles for circular spraying.

3,797,746

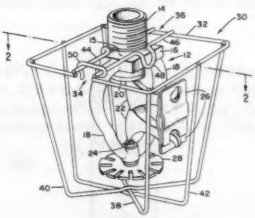
SPRINKLER GUARD

Robert J. Gray, and William R. Navin, both of Raynham, Mass., assignors to Hodgman Manufacturing Co., Inc., Taunton, Mass.

Filed Aug. 17, 1972, Ser. No. 281,517

Int. Cl. B05b *1/28*

U.S. Cl. 239—288.5 **9 Claims**



A wire guard for a pendent or upright sprinkler head, the guard being adapted for installation with one hand. Each of a number of depending wire stirrups lies in a plane with its ends fastened to a spreadable circumferential wire base loop. The base loop is discontinuous with a fastening and sprinkler head engaging means spanning the discontinuity. The base loop is resilient in a region opposite the discontinuity to permit the guard to be installed upon a sprinkler head.

3,797,747

DEVICE FOR ASPIRATING AND ADMIXING ADDITIVES INTO A STREAM

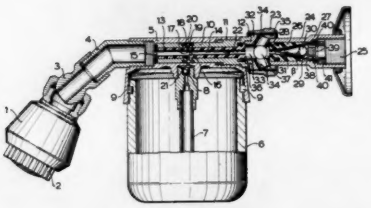
Gunter Buzzi, Schiltach/Schwarzwald, and Werner Lorch, Schramberg, both of Germany, assignors to Firma Hano Grohe KG, Schillach/Schw., Germany

Filed Sept. 22, 1972, Ser. No. 291,403

Claims priority, application Germany, Sept. 25, 1971, 2147931

Int. Cl. A62c *5/04*

U.S. Cl. 239—311 **21 Claims**



The additives are aspirated and admixed into a stream of liquid by means of an injector having a main bore, increasing in width in the flow direction, and suction bores communicating with the main bore. A liquid-return-flow interrupter is arranged at the inlet side of the injector and is in the form of a free jet air chamber communicating with the open air through corresponding openings and adapted to be bridged by the liquid concentrated into a fine jet by a nozzle bore. An acceleration chamber, converging in the flow direction, is arranged at the inlet end of the nozzle bore whose outlet end communicates with the free jet air chamber at the inlet side of the latter. An apertured disc is positioned at the inlet side of the acceleration chamber and is formed with a plurality of bores therethrough for flow of liquid to the acceleration chamber.

3,797,748

LIQUID SPRAYING DEVICE

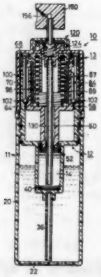
Takamitsu Nozawa, and Takao Kishi, both of Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,191

Claims priority, application Japan, Mar. 30, 1972, 47-037544[U]; Mar. 30, 1972, 47-037545[U]

Int. Cl. B05b *1/32, 11/00*

U.S. Cl. 239—321 **12 Claims**



A refillable hand-operated liquid sprayer of the type which requires no container pressurizing gas nor other foreign propellant. It operates to pump a small quantity of liquid to be sprayed from a container to a small cylindrical chamber wherein the liquid is pressurized by the force of a coiled spring which is stressed during "cocking" stroke preparatory to spraying the liquid from the device. A cover unit is removably mounted on the open end of the container, and a spray head is rotatably mounted on the cover unit, the rotation of the head relative to the unit causing the spring to be compressed thereby sucking liquid up from the container into the chamber. A hollow stem made of rigid material such as metal or hard plastic is provided for communicating the chamber with a discharge valve and also serving as a guide for a piston which moves vertically within the cylindrical chamber. With this arrangement, there is little likelihood that the stem is caught in the spring thereby hindering further compression of the spring or resulting in severance of the stem, as is frequently the case with previous flexible hollow tube.

3,797,749

SPRAYER

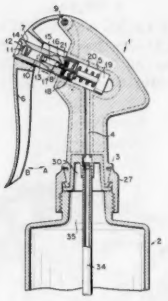
Tetsuya Tada, 2-6, 3-chome, Nishinakanobu, Shinagawa-ku, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,428

Claims priority, application Japan, Sept. 8, 1971, 46/69516

Int. Cl. B05b *9/04*

U.S. Cl. 239—321 **13 Claims**



A sprayer comprises a sprayer body and a container connected to said sprayer body by means of screw connection. Said screw connection is achieved by threadly engaging a connecting cylindrical member or a nut snapped on the lower end of the sprayer body with the male screwed neck of the container, and a truncated conical member is inserted into the lower end of the sprayer body after said snap fitting of the nut and to prevent the nut disengaged from said male threaded neck.

3,797,750

POWDER SPRAYING APPARATUS

Kurt Herman Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 9, 1972, Ser. No. 305,140

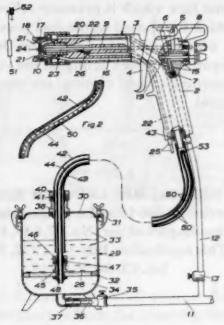
Claims priority, application Sweden, Nov. 12, 1971, 14498/71

Int. Cl. B05b *7/14*

U.S. Cl. 239—336 **16 Claims**

In a powder spraying apparatus the powder is brought into fluidized state within a pressure vessel and in a conveying main conduit. Fluidizing is accomplished by pressure fluid acting through a sinter metal bed in the vessel and through a per-

forated supplementary conduit in the main conduit. When a control valve is opened, powder will flow for atomizing and



coating purposes in the manner of a liquid from the pressure vessel to spray guns.

3,797,751

SPRAYERS FOR LIQUIDS

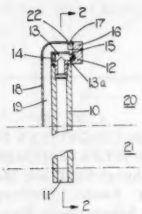
Thomas Haddow, Padiham, and Eric Gates, Nelson, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 3, 1972, Ser. No. 268,892

Claims priority, application Great Britain, July 2, 1971, 31076/71

Int. Cl. B05b *7/00*

U.S. Cl. 239—426 **5 Claims**



A liquid sprayer for use in a gas turbine engine, in which liquid is supplied through a tube to a passage extending transversely of the tube towards a slot adjacent an end wall of the passage. A conduit supplies air externally of the passage towards an end wall thereof which is defined by a surface aligned with the slot. An outlet for fuel and air mixed at said surface is provided in a side wall of the conduit adjacent said surface.

3,797,752

HAIR DRYER NOZZLE

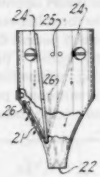
Daniel Cercone, 212 Cedarville St., Pittsburgh, Pa.

Continuation of Ser. No. 25,378, April 3, 1970, abandoned. This application Nov. 15, 1971, Ser. No. 198,666

Int. Cl. A62c *31/00*

U.S. Cl. 239—443 **6 Claims**

This invention relates to a blower nozzle adapted to fit onto a hand dryer for drying human hair wherein the blower nozzle has a plurality of apertures along a side thereof for allowing gas to escape and has a restricted mouth. In this invention adjustable closure means are provided internally of said nozzle, which, when turned in one direction, allows free flow of heated air through the nozzle and when turned in another direction diverts a portion of the air away from the nozzle mouth and to and through apertures in the side of the nozzle. In a preferred embodiment of my invention the apertures are



distorted so that air passing through the apertures is given a direction generally parallel to the axis of the nozzle instead of a direction generally normal to the axis of the nozzle.

3,797,753

LIQUID FUEL INJECTION SYSTEMS

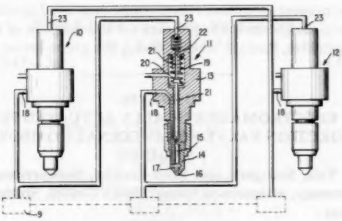
Ivor Fenne, Greenford, and Douglas Gordon Burton, Weybridge, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Oct. 25, 1972, Ser. No. 300,858

Claims priority, application Great Britain, Oct. 28, 1971, 50066/71

Int. Cl. F02m *47/00*

U.S. Cl. 239—533 **5 Claims**



A fuel injection nozzle includes a valve member movable against the action of resilient loading by means of fuel under pressure supplied from an inlet. The nozzle also includes a piston which is operably connected to the valve member and which is subjected to fuel under pressure flowing by way of a valve controlled conduit. The fuel under pressure acting on the piston reinforces the action of the resilient loading. Conveniently the fuel is obtained from the inlet of the nozzle unit.

3,797,754

CONTINUOUS TUBE TRICKLE IRRIGATION

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.

Continuation-in-part of Ser. No. 274,078, July 21, 1972. This application June 21, 1973, Ser. No. 372,318

Int. Cl. B05b *15/00*

U.S. Cl. 239—542 **20 Claims**

A continuous tube trickle irrigator including a tubular member having longitudinally extending membrane forming

with the surrounding tubular member a main flow passage and a flush flow passage, the membrane having a series of longitudinally spaced inlet openings communicating between the main flow passage and the flush flow passage, and the tubular member having a series of outlet openings longitudinally offset from the inlet openings, to form between the openings a series of self flushing emitters which permit flush flow when the pressure in the main passage is below a predetermined minimum value, the membrane being collapsible in the vicinity of each outlet opening above such minimum pressure to form with the tubular member a series of trickle passages.

3,797,755

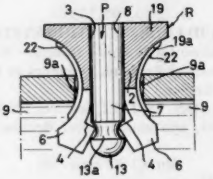
SPRINKLER NOZZLE

Satoru Saisho, Yokohama, Japan, assignor to Koyo Fastener Co., Ltd., Yokohama City, Japan

Filed Nov. 21, 1972, Ser. No. 308,351

Int. Cl. B05b *1/20*

U.S. Cl. 239—547 **10 Claims**



The present invention relates to an improved sprinkler nozzle for a simple sprinkling device for the purpose of irrigation of vegetables, flowers, trees growing in a green house.

3,797,756

ELECTROMAGNETICALLY ACTUATED FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES

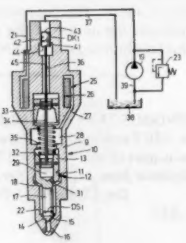
Willi Voit, Stuttgart, and Kurt Ziesche, Neckarrems, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 5, 1973, Ser. No. 338,305

Claims priority, application Germany, Mar. 3, 1972, 2210213

Int. Cl. B05b *1/30*

U.S. Cl. 239—585 **22 Claims**



An electromagnetically actuated fuel injection valve for internal combustion engines, the valve needle of which, guided in a bore of the valve housing, is connected to the armature of an electromagnet and is lifted from a valve seat when the electromagnet is energized, against the force of a return spring and against the direction of flow of the fuel which is fed under pressure from an external pressure source, thereby establishing communication between a pressure chamber adjacent the valve seat and a discharge nozzle outlet is described, wherein the valve needle is coupled to a compensating piston which is guided coaxially with the valve needle and the armature, in a fluid tight manner in the said bore. The compensating piston has a first frontal face which is pressure-relieved and a second frontal face which is exposed to the fuel pressure, and a cross sectional area which is so large that, when the injection valve is closed, the hydraulic forces acting on the valve needle in the directions of opening and of closing, are equal or at least approximately equal.

3,797,757

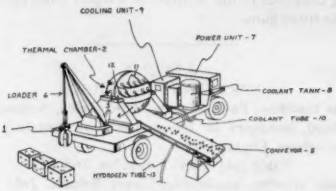
THERMAL BREAKING OF ROCKS

Robert G. Marshall, 8308 Lilac Ln., Alexandria, Va.

Continuation-in-part of Ser. No. 97,645, Dec. 14, 1970, abandoned. This application July 12, 1972, Ser. No. 271,321

Int. Cl. B02c *19/18*

U.S. Cl. 241—1 **11 Claims**



Sudden heat shock (thermal shock) and cooling cycles are used to break large stones into fragments of predetermined size, without conventional heavy and bulky crushing equipment.

3,797,758

METHOD OF PRODUCING FINELY DISPERSED ALPHA CALCIUM SULFATE HEMIHYDRATE

Egon Cherdron, Limburgerhof/Pfalz; Manfred Haerter, Neuhofen/Pfalz; Fritz Fassle, Limburgerhof/Pfalz; Hans-Joachim Forster, Schwetzingen-Hirschacker, and Istvan Potencsik, Mannheim, all of Germany, assignors to Gebr. Giulini Gesellschaft mit beschrankter Haftung, Ludwigshafen a. Rhine, Germany

Filed June 16, 1972, Ser. No. 263,473

Int. Cl. B02c *19/00*

U.S. Cl. 241—29 **3 Claims**

A method for producing finely dispersed alpha calcium sulfate hemihydrate. The hemihydrate has a solvent retention of at least 0.85 milliliters toluene per gram. The method includes grinding alpha calcium sulfate hemihydrate to an average particle size below 4 microns and subjecting the resulting product to a disintegrating of agglomerations of particles in the product.

3,797,759

CRUSHER ADJUSTING SYSTEM

D. Carter Davis, Menomonee Falls; Ulhas S. Sawant, Sussex, and Francis Scaffidi, West Allis, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

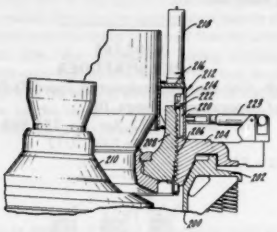
Filed Apr. 5, 1972, Ser. No. 241,312

Int. Cl. B02c *25/00, 2/00*

U.S. Cl. 241—30 **18 Claims**

This is a cone crusher and method of adjusting it under load

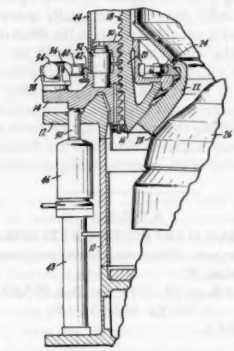
by partially unclamping the bowl to an extent such that the bowl may be rotated but with some clamping pressure maintained so that the threads stay in full contact thereby avoiding any damage to the threads from the crushing blows.



3,797,760
ADJUSTING CRUSHER UNDER LOAD

D. Carter Davis, Menomonee Falls; Ulhas S. Sawant, Sussex, and Francis Scaffidi, West Allis, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Apr. 5, 1972, Ser. No. 241,313
Int. Cl. B02c *2/00*
U.S. Cl. 241—30 **21 Claims**



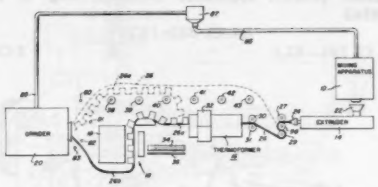
This is a cone crusher and method of adjusting it under load by partially unclamping the bowl to an extent such that the bowl may be rotated but with some clamping pressure maintained so that the threads stay in full contact thereby avoiding any damage to the threads from the crushing blows.

3,797,761
MATERIAL HANDLING SYSTEM FOR PLASTIC FILM

Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 125,471, March 18, 1971, Pat. No. 3,733,160. This application Sept. 28, 1972, Ser. No. 293,070
Int. Cl. B02c *23/02*
U.S. Cl. 241—34 **2 Claims**

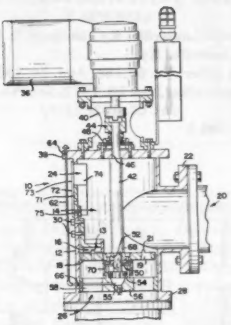
The system includes mixing apparatus, extruder, thermoformer, trimmer and grinder. Ground plastic from the mixing apparatus is fed directly to the extruder which provides a thin, continuous film of plastic. In the direct feed mode this film moves from the extruder directly into the thermoformer and then to the trimmer. Articles are formed in the film by the thermoformer and are cut from the film by the trimmer to leave a skeletal film which is fed directly into the grinder. In the bypass feed mode, film from the extruder or from the thermoformer is fed directly into the grinder. Novel mixing apparatus is disclosed for mixing plastics of different bulk densities, such as ground film from the thermoformer, extruder and trimmer. Also, novel cutting apparatus is disclosed which reduces noise and overloading problems.



3,797,762
SEWAGE COMMINUTOR

Howard J. Wood, Largo, and James A. Greiner, Clearwater both of Fla., assignors to Engineered Products, Clearwater, Fla.

Filed July 24, 197*z*, Ser. No. 274,735
Int. Cl. B02c *13/31*
U.S. Cl. 241—36 **4 Claims**



An anti-clogging sewage comminutor comprising a housing including an inlet port formed in the side thereof and a surge port formed opposite an inlet port. In addition an outlet port is formed in the bottom thereof and a reversible motor is attached to the housing by a motor adapter. A cutter means comprising a circular rotor disc is disposed within the interior of the housing and a V-shaped double-edge cutter bar is connected to the interior wall of housing and extends outwardly therefrom in operative relation to each other. An outlet port is disposed beneath the cutter bar and rotor disc where by solid waste material pumped into the housing is reduced by the shearing action between the cutter bar and rotor disc and passed from the outlet port into the sewage line. The reversible motor changes whenever the rotor disc becomes jammed causing the rotor disc to reverse direction and oscillate until free.

3,797,763

APPARATUS FOR PROCESSING MATERIALS

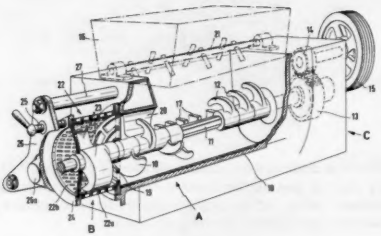
Walter Handle, Insel Reichenau; Rainer Handle, and Paul Latt, both of Constance, all of Germany, assignors to Firma Rieter-Werke Konstanz, Constance, Germany

Filed Jan. 7, 1972, Ser. No. 216,011

Claims priority, application Germany, Aug. 2, 1971, 2138562

Int. Cl. B02c *19/20*

U.S. Cl. 241—82.1 **5 Claims**



A material processing apparatus includes coarse and fine comminuting sections and a mixing section interposed therebetween. A common drive shaft is provided for the sections. Blade members are mounted on the drive shaft in the coarse and fine comminuting sections for pulverizing incoming material. The mixing section includes a tunnel portion, a screen member, and a helical blade mounted on the drive shaft for mixing incoming materials and pressing them through the screen.

3,797,764

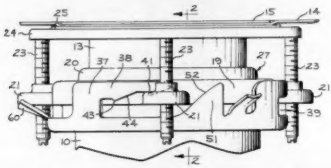
SELF-LATCHING WASTE FOOD DISPOSER MOUNTING ASSEMBLY

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 67,106, Aug. 26, 1970, abandoned. This application June 29, 1972, Ser. No. 267,490

Int. Cl. B02c *18/42*

U.S. Cl. 241—100.5 **9 Claims**



A sink mount support assembly for a waste food disposer includes a pair of annular members adapted to automatically engage with each other and latch a disposer in a first holding position relative to a sink drain sleeve when the disposer is axially aligned and lifted toward its installed position on a sink drain sleeve. The self-latching feature is accomplished by auto-rotation of one of the connecting members and serves to hold the disposer on the drain sleeve in a relatively loose arrangement whereby the disposer may be axially rotated to facilitate the connection of a drain line to the disposer's sump. Thereafter, the disposer may be more firmly fastened to the sink sleeve by manually further rotating the connecting member a short distance about the vertical axis of the assembly to a second, locked position. This completes the mounting operation, and the hopper of the disposer is thereby firmly sealed in drain flow communication with the drain sleeve. The assembly can be quickly disconnected as required by reversing the latter procedure and counter-rotating the connecting member.

3,797,765

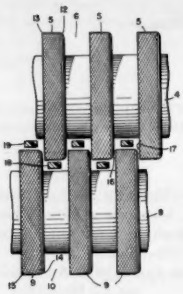
PAPER SHREDDER

Abe Samuels, Chicago, Ill., assignor to Speed-O-Print Business Machine Corporation, Chicago, Ill.

Filed May 9, 1972, Ser. No. 251,800

Int. Cl. B02c *7/04, 7/12*

U.S. Cl. 241—236 **6 Claims**



A shredding device for paper and other material capable of being torn having a pair of oppositely rotating rolls, each with a plurality of circular discs thereon axially spaced apart along the length thereof is provided wherein the discs on one roll are received within the spaces between discs on the other roll and spaced from the faces thereof, and one circumferential edge of certain ones or all of said discs has a radius to cooperate with sharp circumferential edges on an adjacent disc thereby tearing and shredding the material. Comb teeth are located in the spaces between adjacent discs and are floatingly mounted to prevent jamming of the material being shredded.

3,797,766

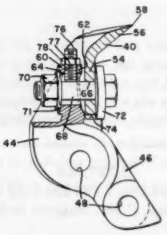
FORAGE HARVESTER CUTTERHEAD

John Joseph Hennen, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sept. 29, 1972, Ser. No. 293,672

Int. Cl. A01d *55/18*

U.S. Cl. 241—282.2 **7 Claims**



A forage harvester has a reel-type cutterhead having an axial shaft with a pair of disk-like radial members mounted on the shaft. A plurality of longitudinally extending, parallel, equiangularly spaced knives have flat generally radially extending inner portions and forwardly inclined outer portions with cutting edges at their outer ends generating a cylinder as the cutterhead rotates. Each knife is mounted on the cutterhead by means of a pair of support elements respectively at-

tached to the respective radial members, each support element having a flat, generally radial seat against which the knife is clamped by a bolt extending through the knife and through a radial slot in the support element. Each knife is adjustable in a radial direction by loosening a nut on the bolt and sliding the bolt and the knife attached thereto along the support element slot, the adjustment being accomplished by rotating a cam mounted on the head of the bolt in engagement with an abutment on the support element. A radially extending set screw in the support element is engageable with the bolt to lock the bolt in the selected position.

3,797,767

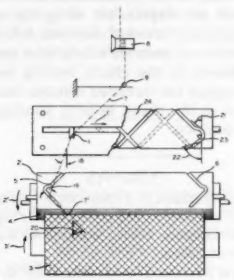
HIGH-SPEED CROSS-WINDING DEVICE

Heinz Schippers, and Erich Lenk, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Aug. 9, 1971, Ser. No. 170,009

Int. Cl. B65h *54/30*

U.S. Cl. 242—43 **3 Claims**



High-speed cross-winding apparatus with two traverse motion devices for winding elongated materials, especially continuous filaments, such as tapes and threads into packages, particularly at filament velocities exceeding 1,500 m/min. and embodying a first traversing device in the form of a reciprocable thread guide, and a second traversing device in the form of a pair of rotatable thread guide means taking over the thread traverse stroke near the respective ends of the traverse stroke of said first device, means for driving said first and second traverse motion devices synchronously with each other, and independent means for rotatably driving the package. The second, stroke reversal device temporarily accelerates stroke velocity above the stroke velocity of the first device before and/or after stroke reversal, and the guide groove of the first device has a greater pitch before and/or after stroke reversal and an enlarged radius of stroke reversal curvature.

3,797,768

THREAD-GUIDE CONTROL APPARATUS

August Ruegg, Wil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

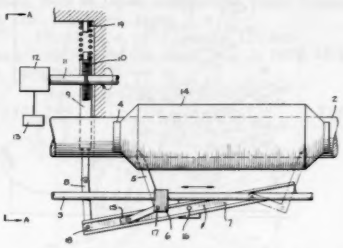
Filed Dec. 9, 1971, Ser. No. 206,332

Claims priority, application Switzerland, Dec. 22, 1970, 18933/70

Int. Cl. B65h *54/32*

U.S. Cl. 242—43.1 **1 Claim**

A thread-guide is reciprocated along a support rod opposite a bobbin to be wound and is pivoted by a guide rail rotatable by control means including drive means and a control shaft. The control shaft and support rod may extend along adjacent



a plurality of winding stations and the drive means may be common to all stations.

3,797,769

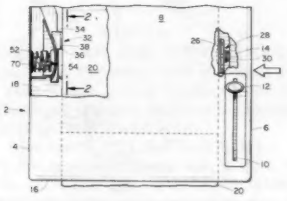
ROLL SUPPORTING APPARATUS FOR ROLL TOWEL DISPENSER

Council A. Tucker, Glendale, Calif., assignor to Towlsaver, Inc., Los Angeles, Calif.

Filed Nov. 11, 1971, Ser. No. 197,721

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.53 **26 Claims**



A combination support structure which provides for the support of a roll of paper toweling or the like in a manner that the roll is not easily displaced from its supported position and wherein one of the support members is pivotally mounted and positionable in locked or unlocked positions to provide ease of access for mounting the roll of paper toweling. The normal dispensing action of the paper toweling positions the one support member in the locked position. Additionally, because each of the supports is spring biased and the supports uniquely coact, the imposition of lateral forces on the cabinet housing which are transmitted to the supports does not displace the paper roll from its supported dispensing position because of the absorption and dissipation of those forces.

3,797,770

AUTOMATIC CASSETTE TAPE WINDING APPARATUS

Masayuki Hosoda, and Kimitaka Kassai, both of Tokyo, Japan, assignors to Otari Electric Company Ltd., Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,553

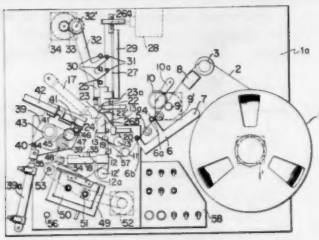
Claims priority, application Japan, Apr. 1, 1971, 46-19865

Int. Cl. B65h *19/20, 17/02*

U.S. Cl. 242—56 R **6 Claims**

In a tape winding apparatus the start of the recording is sensed to start the tape take-up rollers, a leader tape is spliced with the recorded tape and the recorded portion is automati-

cally wound into a cassette while the unrecorded excess portion of the leader tape is removed, the end of recording is



sensed and the tape is automatically cut, wound into the cassette and coupled with the leader tape.

3,797,771

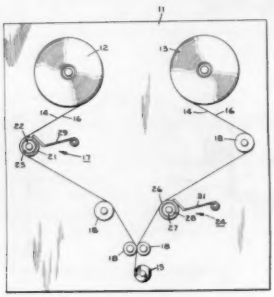
METHOD AND APPARATUS FOR WINDING METALLIZED-TYPE CAPACITORS

Donald R. Brown, Downers Grove, and Otto T. Masopust, Jr., Claredon Hills, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,602

Int. Cl. H01g *13/02*

U.S. Cl. 242—56.1 **6 Claims**



Two capacitor forming strips are wound to provide a capacitor roll having a given capacitance value. The resistance, the capacitance, and the number of winding turns applied to the capacitor roll being wound are monitored during winding, the average required number of strip winding turns to provide a capacitance of the given value being known. A minus and a plus limit are assigned to the average required number of winding turns, and winding of the capacitor roll is terminated if either the monitored resistance of the capacitor is below a predetermined resistance value, if at the minus turns limit the capacitance value is greater than the given value, if at the plus turns limit the capacitance value is less than the given value, or if the capacitor reaches the given capacitance value when the number of turns wound on the capacitor roll is within the minus and plus limits of turns.

3,797,772

EXPANDIBLE CHUCK

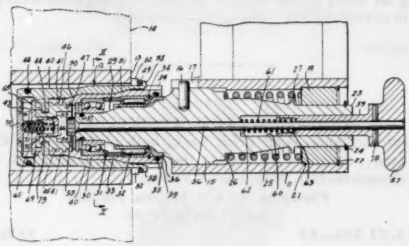
Robert G. Lucas, Janesville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 1, 1972, Ser. No. 230,681

Int. Cl. B65h *75/24*

U.S. Cl. 242—72.1 **17 Claims**

Expansible chuck supporting a roll of web material for winding or unwinding. The chuck is supported to be cantilevered from a winding station and has a spindle projecting from the support for the chuck and a chuck bearing housing freely rotatable on the spindle. The chuck bearing housing has external frusto-conical surfaces engaged by spaced internal frusto-conical segments on the insides of chuck leaves, guided in the chuck bearing housing for movement therealong. An externally threaded member has threaded engagement with internal threads in the chuck bearing housing and has connection with the chuck leaves to translationally move the chuck leaves upon turning of the threaded member. A hand wheel and torque shaft are depressible along the spindle to interengage and turn the threaded member. A locking member carried by the threaded member is held from rotation relative to the chuck leaves by the chuck bearing housing, and is biased to interengage the threaded member and hold it from rotation relative to the chuck bearing housing, to hold the chuck leaves in position.



3,797,773

MAINTAINING RIBBON TENSION WITH TAPERED-SHUNT REED SWITCH CONTROL APPARATUS

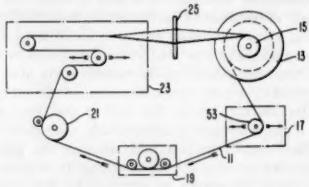
Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 52,635, July 6, 1970, abandoned.

This application Mar. 16, 1972, Ser. No. 235,362

Int. Cl. B65h *77/00, 17/02*; **G03b** *1/04*

U.S. Cl. 242—75.43 **8 Claims**



Apparatus for maintaining tension in a ribbon which is being wound on an intermittently driven take-up spool. A reed switch having a tapered shunt is used to control a motor which drives the take-up spool. The motor is driven intermittently to maintain the ribbon tension substantially constant within predetermined limits.

3,797,774

SEMI-AUTOMATIC BAIL STRUCTURE FOR OPEN FACE REELS

Richard Dumbauld, Oakdale, Iowa, assignor to Berkeley & Company, Inc., Spirit Lake, Iowa

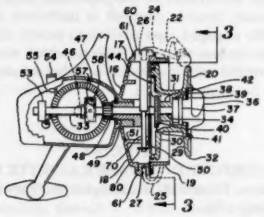
Filed Aug. 7, 1972, Ser. No. 278,358

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.2 G **10 Claims**

An improved line bail structure for spinning reels wherein the line bail comprises a generally resilient semicircular arm

with a certain first predetermined normal diameter, and with means for coupling the arm to the reel rotor. The bail is resiliently coupled to the rotor through a plunger element which is adapted to control the rockable rotation of the bail between open and closed dispositions. Camming means are



formed along the plunger to define the stable limits for the open and closed dispositions of the bail, and with a camming ramp being secured to the reel frame to automatically rockably shift the line bail from open disposition to closed disposition upon rotation of the rotor.

3,797,775

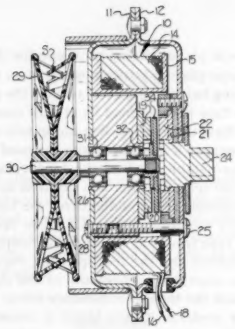
STRAND TENSION CONTROL

Eugene F. White, 600-South Church Streets, Monroe, N.C.

Filed Feb. 1, 1973, Ser. No. 328,502

Int. Cl. B65h *59/16*

U.S. Cl. 242—155 M **19 Claims**



The tension in advancing strand materials is controlled by an apparatus in which the restraint imposed upon a strand engaging a pulley or cylinder is controllably varied by changes in the flux density of an electromagnetic field. Cooperating poles which direct the flux of the field are movable into and out of axial alignment and movable toward one another and apart, to facilitate accurate control over the flux density. The tension control apparatus is particularly applicable to textile yarn processing apparatus such as false twist texturing apparatus and to winding apparatus in which strand material is supplied from a creel.

3,797,776

AUTOMATIC TAPE LOADING TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

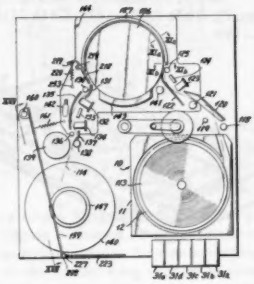
Hiroyuki Umeda, Yokohama, and Shichiro Fukatsu, Chigasaki, both of Japan, assignors to Victor Company of Japan, Ltd., Tokohama, Japan

Filed Mar. 4, 1971, Ser. No. 121,008

Claims priority, application Japan, Mar. 6, 1970, 45/18940; Mar. 30, 1970, 45/41321

Int. Cl. G11b *15/66*; **B65h** *75/28*

U.S. Cl. 242—188 **12 Claims**



An automatic tape loading type magnetic recording and reproducing apparatus comprises means for detecting a leader of a predetermined length fed from a supply reel and stopping the feeding of the leader, an automatic take-up reel for automatically engaging and positively taking up the fed leader, and means for detecting the feeding of a tape following the leader and thereafter positively transporting the succeeding tape.

3,797,777

TAPE REEL AND TAPE REEL STORING MAGAZINE

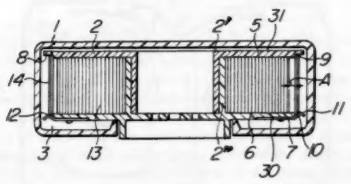
Hiroo Hosono; Seiko Minamide, both of Osaka; Juichi Hukushima; Yoku Kudou, both of Neyagawa, and Shunichiro Kimura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 5, 1971, Ser. No. 131,351

Claims priority, application Japan, Apr. 8, 1970, 45/30294; Apr. 8, 1970, 45/30295; Apr. 8, 1970, 45/34189; Apr. 8, 1970, 45/34191; Aug. 24, 1970, 45/84518; Aug. 24, 1970, 45/84519; Aug. 24, 1970, 45/84521; Aug. 24, 1970, 45/84523; Sept. 18, 1970, 45/93362; Oct. 19, 1970, 45/104352; Nov. 30, 1970, 45/120034; Nov. 30, 1970, 45/120036; Nov. 30, 1970, 45/120054; Dec. 2, 1970, 45/120723; Dec. 2, 1970, 45/120724

Int. Cl. G11b *23/10*; **B65h** *75/28*

U.S. Cl. 242—197 **9 Claims**



A tape reel or a tape reel storing magazine of the type in which a leader tape can automatically thread along a predetermined path defined on a recording and reproducing apparatus, said tape reel having a plurality of circumferentially spaced resilient pieces which are provided by a plurality of radial cutouts formed on the outer periphery thereof, said

resilient pieces serving to hold the leader tape on the outer peripheral portion of the reel in such a manner that the leader tape can easily be taken out of the reel when the tape is to be unwound.

3,797,778

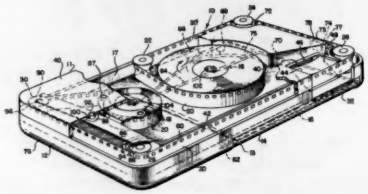
COMPACT MOTION PICTURE FILM HANDLING CASSETTE AND CAMERA

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 813,427, April 4, 1969. This application Nov. 4, 1970, Ser. No. 86,998

Int. Cl. G03b *23/02, 1/04;* **G11b** *15/32*

U.S. Cl. 242—199 **7 Claims**



A compact multipurpose motion picture film handling cassette useful during exposure, processing and projection operations. An exposure station is located adjacent a corner of the cassette. This arrangement permits the cassette to be mounted in the handle section of a uniquely compact camera and, then subsequently, in a uniquely compact processor-projector unit. The cassette may also include a normally inoperative film processing station. A resilient member of the cassette extends in spaced relationship to idlers intermediate of the exposure station and the cassette's takeup reel and the cassette includes means to receive a force applying member into operative relationship with this resilient member. This resilient member automatically snubs the adjacent idlers when mounted in the camera and is adapted to selectively snub these same idlers when the cassette is in the processor-projector unit.

3,797,779

TAPE CASSETTE

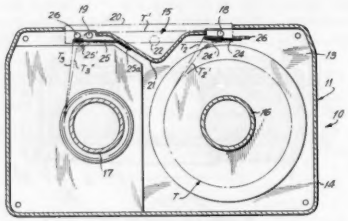
Hanjiro Esashi, and Katsuyoshi Kawamata, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,279

Claims priority, application Japan, July 14, 1971, 46-62244[U]

Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*

U.S. Cl. 242—199 **9 Claims**



In a tape cassette for use in a magnetic recording and/or reproducing apparatus, and in which the tape is wound on, and extends between freely rotatable reels in the cassette housing having an opening across which a run of the tape is guided for access to the tape through such opening; slackening of the tape run as a result of free turning of the reels is avoided by providing resiliently flexible elements, preferably of plastic, each of which is fixed at one end within the housing and has its other free end engaged with a portion of the tape between a respective one of the reels and the tape run for urging the respective tape portion into a relatively tortuous path in which the tape is engaged by a fixed surface, which may be on a guide member or otherwise, and which imposes an increased resistance to movement of the tape into said tape run, and each resiliently flexible element is deflected in response to tension in the engaged tape portion to permit the latter to follow a relatively less tortuous path in which the resistance to movement of the tape is reduced to substantially free the tape for transfer between the reels.

3,797,780

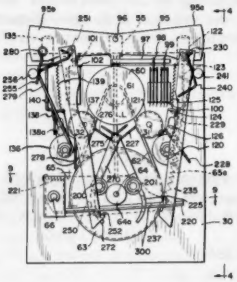
TWO DIRECTIONAL TAPE CASSETTE PLAYER

Edwin S. Bara, Elmwood, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Continuation of Ser. No. 831,077, June 6, 1969. This application Jan. 17, 1972, Ser. No. 218,266

Int. Cl. G11b *5/00, 15/32, 23/04*

U.S. Cl. 242/200 **3 Claims**



A tape cassette player having provision for slot loading of a cassette into tape playing position wherein an exposed length of tape extending between a pair of reels in the cassette is positioned along a tape path defined by at least one tape head and a tape drive wheel disposed in line along said tape path. The drive wheel engages a portion of the exposed length of tape against a non-rotatable part of the tape cassette to form a drive couple and feed the tape at a uniform speed. Operating mechanism including reel spindles drive the tape in either forward or reverse direction with mechanism responsive to the completion of tape travel, as evidenced by stopping of the tape reels in the cassette and the reel spindles, causing reversal of rotation of the tape drive wheel and of the drive to the reel spindles to cause the tape to commence travel in the opposite direction. The reversal of tape travel is caused by a sensing member which senses rotation of a tape reel and a reel spindle and which moves upon stoppage of the reel spindle to signal the tape reversal operation.

3,797,781

DECELERATION RESPONSIVE FLOW VALVE

James T. Hollis, Fountain Valley, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

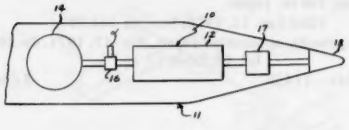
Filed Oct. 30, 1972, Ser. No. 301,927

Int. Cl. B64g *1/00*

U.S. Cl. 244—1 SC **1 Claim**

A coolant fluid is supplied to a permeable nose tip of a reentry vehicle from a coolant reservoir through a flow control

valve having a spool type piston and sleeve valve wherein the orifice area changes as a function of deceleration. A second



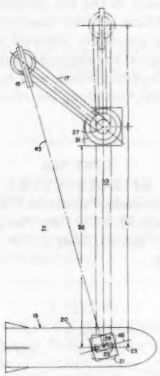
piston and sleeve valve is provided in the output of the flow control valve to maintain a constant pressure difference across the flow control valve.

3,797,782

MISSILE LAYING DEVICE

William W. Stripling; Harold V. White, and Joe S. Hunter, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,796
Int. Cl. F41g *11/00*
U.S. Cl. 244—3.16 **3 Claims**



A device including an arm with proximal and distal ends, a telescope, a connector disposed in pivotal relation between the proximal end and the telescope and provided with a mechanism in engagement between the telescope and arm for intersection of the distal end and the axis of said telescope during rotation thereof.

3,797,783

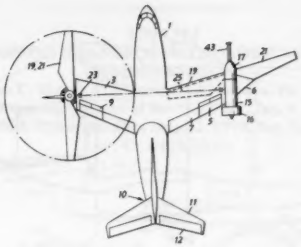
CONVERTIPLANE

Adrian V. Kisovec, 10 Waterford Way, Wallingford, Pa.

Continuation-in-part of Ser. No. 57,055, July 22, 1970. This application May 25, 1972, Ser. No. 256,651
Claims priority, application Great Britain, July 23, 1969, 37068/69
Int. Cl. B64c *27/22*
U.S. Cl. 244—7 A **13 Claims**

This invention combines rotating wings with a jet engine to provide helicopter type vertical lift and pure jet forward propulsion when the rotating wings are stowed in a manner to provide useful fixed wing lift.

This invention provides for a converticraft incorporating the advantage of low disc loading in the helicopter mode providing for vertical lift while retaining efficient forward flight characteristics including pure jet operation, high lift over drag ratio and high wing aspect ratio. A substantial portion of the rotor is used as a useful wing extension in high speed configuration and accordingly reduces parasitic weight. This is primarily accomplished by a tilt rotor jet engine assembly mounted on the outboard end of the center wing section and having rotary wings to provide helicopter type lift. When the jet engine is rotated for forward thrust one of the two rotary wings is positioned to form an aerodynamically useful extension of the center wing section to reduce induced wing drag. The other rotary wing is stowed in the bottom of the center wing where it may be selectively and optionally used to increase airfoil camber when that is desirable as in low speed forward flight.

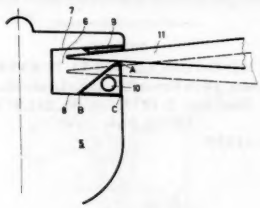


3,797,784

AUTOMATICALLY OPERATING DEVICE FOR SEALING A FUSELAGE RECESS OF AIRCRAFTS

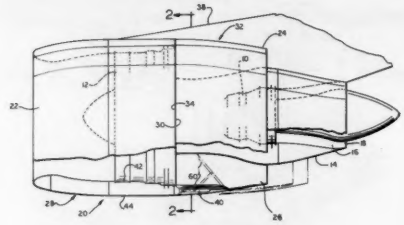
Gunther Muller, Krailling, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Sept. 8, 1972, Ser. No. 287,268
Claims priority, application Germany, Sept. 13, 1971, P 21 45 618.8
Int. Cl. B64c *3/38, 5/12*
U.S. Cl. 244—46 **4 Claims**



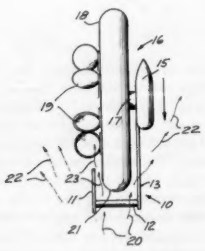
Sealing device for an aircraft fuselage. For adjustable wing aircraft whose wings retract into the fuselage under certain conditions of flight there is provided resilient sealing means at the upper and lower sides of the wing receiving recess for closing the recess and providing a smooth fuselage contour in all positions of the wing. The sealing means comprise a resilient tube arranged at each of the upper and lower edges of the recess and so proportioned to the size of the recess that they are pressed together under some appreciable pressure even when the wing is extended. In one form of the invention said sealing tube is comprised of spirally wound spring wire which if desired may be of multilayer construction, said multilayers being, if desired, wound in opposite directions. In other embodiments, the resilient tube may be enveloped by an elastic material for conforming the closure means to the contour of the aircraft.

3,797,785
THRUST MODULATING APPARATUS
Richard B. Baerresen, Bonita, and Richard H. Timms, San Diego, both of Calif., assignors to Rohr Industires, Inc., Chula Vista, Calif.
Filed Aug. 31, 1972, Ser. No. 285,339
Int. Cl. B64c 15/04
U.S. Cl. 244—53 R 5 Claims



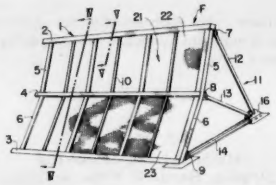
Fan jet engine has cowl surrounding engine and terminating in jet exhaust nozzle. Elongate shroud surrounds fan and engine to define annular passage for fan air terminating forward of exit end of nozzle. Aft portion of shroud is a separate sleeve movable axially to define a peripheral outflow gap for fan air. A ring of reverse thrust cascades is located in the gap, and a set of blocker doors are pivoted at their aft ends adjacent to the aft end of the cascade ring. In stowed position they overlie the inner side of the cascade ring and block lateral outflow. In deployed position they converge forward to block rearward flow of air and to divert it out through cascade ring. The sleeve in stowed position overlies the outer side of the cascade ring and prevents inflow, while its trailing edge is in the plane of maximum size of the core to define a convergent nozzle for cruising operation. The sleeve shifts partially aft to a position defining a larger nozzle exit area for takeoff and landing, with the blocker doors stowed and latched. Final deployment of the sleeve releases the latches and positively moves the doors to deployed position. Initial stowing movement of the sleeve positively stows the doors and positively secures the latches.

3,797,786
WIND-FORCED WHEEL TURNER
Albert M. House, 1018 Brookline Ave., Louisville, Ky.
Filed Apr. 7, 1972, Ser. No. 241,971
Int. Cl. B64c 25/40
U.S. Cl. 244—103 S 2 Claims



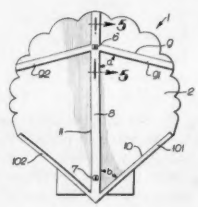
An improvement in impeller type wheel turner for aircraft landing wheels utilizes an air stream deflector near the leading surface of the tire.

3,797,787
JET ENGINE BLAST FENCE
Shosuke Watanabe, deceased, late of Tokyo, Japan (Naoko Watanabe, sole successor), assignor to Nippon Steel Corporation, Tokyo, Japan
Filed Apr. 14, 1972, Ser. No. 244,097
Claims priority, application Japan, Apr. 17, 1971, 46-29783
Int. Cl. E04h 17/16
U.S. Cl. 244—114 B 5 Claims



A jet engine blast fence comprising a blast shield plate made of an expanded metal, a retaining frame to which said blast shield plate is affixed and a base for fixing the retaining frame to the ground in such a manner that the retaining frame is inclined toward the jet blast, the said expanded metal having strands sloping upward in the lee direction, the said strands defining openings which are also horizontally clear so that a part of the blast is positively allowed to pass horizontally through said openings of the expanded metal and is raised upward by a part of the blast which part is deflected obliquely upward in the lee direction along the strands of the expanded metal.

3,797,788
KITE STRUCTURE
Jan Beijer, 800 Rio Grande, Pasadena, Calif.
Filed July 17, 1972, Ser. No. 272,130
Int. Cl. B64c 31/06
U.S. Cl. 244—153 R 4 Claims

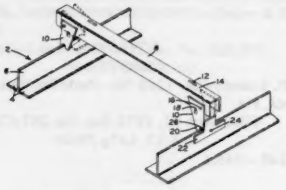


Kite structure in which the airfoil surface is supported by integrally formed ribs and foam backing material against waving or flapping of the surface in flight.

3,797,789
SUPPORT BAR FOR SUSPENDED CEILING LIGHT FIXTURE
Kenneth L. Wasson, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 22, 1972, Ser. No. 237,052
Int. Cl. F21r 3/02
U.S. Cl. 248—214 3 Claims

Suspended ceiling systems are provided with light fixtures which are supported by the gridwork of the suspended ceiling system. Herein, a support bar is positioned relative to two ad-

jacent main runner structures of a suspended ceiling system for the purpose of supporting one side of a light fixture. The



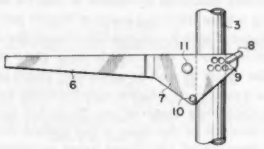
light fixture is hung from two adjacent support bars which are in turn supported by the main runner portion of the ceiling system.

3,797,790

DEVICE FOR HOLDING SUCH ARTICLE AS A TOWEL

Kazuo Iseki, Tokyo, Japan, assignor to Ohta Company Limited, Tokyo, Japan

Filed Apr. 10, 1972, Ser. No. 242,557
Int. Cl. F16b *21/12*
U.S. Cl. 248—221 **2 Claims**



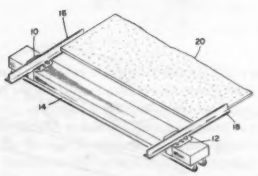
This invention relates to a device of a simple structure provided to embrace a fence of a veranda or a pipe in a room and to hold such article as a towel by the principle of a lever with the weight of the article and itself.

3,797,791

LIGHTING FIXTURE HANGING ASSEMBLY

Ernest L. Psencik, Itasca, Tex., assignor to Rangaire Corporation, Cleburne, Tex.

Filed Nov. 2, 1972, Ser. No. 303,102
Int. Cl. F16b *1/00*
U.S. Cl. 248—228 **14 Claims**



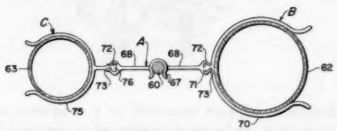
The specification discloses a lighting fixture hanging assembly which includes a first member having a flat surface with wings that extend from opposite sides thereof. The wings include hooks at the ends for lockably receiving a lighting fixture upon insertion of a lighting fixture between the wings. Four pairs of spaced apart apertures are formed through the flat surface of the first member. A second member includes a pair of spaced apart clips which may be disposed through any one of the four pairs of apertures in the first member. When the clips are disposed through the apertures, the clips are operable to be connected to an inverted tee support for a dropped ceiling, such that the lighting fixture is disposed relative to the tee support in any one of four positions. In the first position, the lighting fixture is disposed parallel to the tee support and in the second position the lighting fixture is disposed perpendicular to the tee support. In the third and fourth positions, the lighting fixture is disposed at acute angles to the tee support.

3,797,792

CLAMPING MEANS FOR PHYSIOLOGICAL FLUID INFUSION SYSTEMS

Constance C. Huber, 317 Fourth St., Oakmont, Pa.

Continuation-in-part of Ser. No. 1709, Jan. 9, 1970, abandoned. This application May 12, 1971, Ser. No. 142,590
Int. Cl. A47b *96/06*
U.S. Cl. 248—229 **5 Claims**



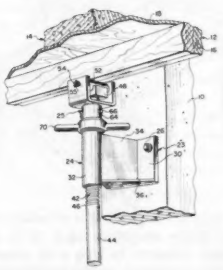
Clamping means for preventing bottles containing a physiological fluid from swinging and/or being dislodged from hooks on which they are suspended, resulting in possible breakage and injury to a patient. The clamping means is secured to an upright pole and encircles physiological fluid bottles suspended from hooked arms extending outwardly from the pole.

3,797,793

SHORING SCAFFOLD AND FORMWORK SUPPORT

Donald B. Moritz; David O. Wilson, both of Arlington Heights, and Francis B. Mueller, Downers Grove, all of Ill., assignors to Waco Scaffold & Shoring Co., Division of Bliss & Laughlin Industries, Inc., Schiller Park, Ill.

Filed June 19, 1972, Ser. No. 264,274
Int. Cl. A47f *5/10*; **A47h** *33/00*; **E04g** *17/16*
U.S. Cl. 248—295 **24 Claims**



Relative adjustable roller and rigid support for formwork and scaffolding in which vertically oriented jack screw assemblies disposed either at the top or bottom of a shore member are adjustable to vary the supported height and position of the shore member with either a rolling or rigid contact, or both, with respect to a work area or a weight bearing horizontal or inclined surface. Engagement is also by roller means located at the working ends of jack screws which operate automatically with their level adjustment to hold the rollers against rotation in weight carrying relationship while the formwork is in its elevated position.

3,797,794

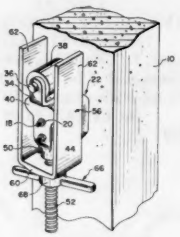
ROLL OUT FORMWORK SUPPORT

Bill M. Lane, Los Angeles, Calif., assignor to Waco Scaffold & Shoring Co., Division of Bliss & Laughlin Industries, Inc., Schiller Park, Ill.

Continuation-in-part of Ser. No. 264,277, June 19, 1972, abandoned. This application Jan. 16, 1973, Ser. No. 324,163

Int. Cl. A47f *5/10*; **A47h** *33/00*; **E04g** *17/16*

U.S. Cl. 248—295 **6 Claims**



A removable support mounted on a structural column to shore formwork during the forming of a concrete floor slab thereon and then strips and rolls out the formwork intact for reuse in forming successively higher floor slabs. The bracket of the support carries vertically aligned weight bearing elements including a depending lift screw and a wing nut thereon, and rigid and roller elements controlled thereby that selectively engage the formwork. The roller is at the top of the bracket and a U-shaped rigid element has its bight portion carried on the depending lift screw for adjustment by the winged nut with its arms slidably guided by the bracket past the roller for elevation to its formwork supporting position.

3,797,795

CLAMPING ROD FOR THE SUSPENSION OF MATERIAL IN THE FORM OF SHEETS OR THE LIKE

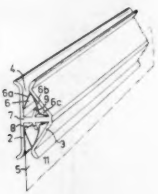
Sven Anders Hemgren, Kungsangen, Sweden, assignor to Beckman & Ullbin AB, Stockholm, Sweden

Filed Apr. 3, 1972, Ser. No. 240,644

Claims priority, application Sweden, May 28, 1971, 6937/71

Int. Cl. A47h *21/00*

U.S. Cl. 248—316 R **7 Claims**



The present invention concerns a clamping rod for the suspension of material, especially sheet-formed material, such as signs and the like. Said clamping rod comprises two substantially rigid flanges which are mutually parallel or convergent and whose edges define a gap into which said material is insertable. A V-formed leaf spring is clamped between said flanges in such a position thereto that a first leg of said spring in said gap abuts against a first one of said rigid flanges along a contact line adjacent the bending line between the two spring legs, and the outer edge of the other leg thereof resiliently presses against the other rigid flange at a distance inside of said gap. Upon insertion, the material is retained between said other flange and the outer edge of said other spring leg.

3,797,796

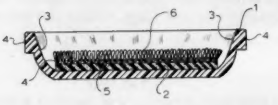
COASTER

Homer D. Lansdowne, 1250 No. Portofino Drive, Apt. 401, Sarasota, Fla.

Filed Sept. 11, 1972, Ser. No. 287,676

Int. Cl. A47g *29/00*

U.S. Cl. 248—346.1 **1 Claim**



This invention relates to a Coaster holding or supporting a glass containing a drink for the purpose of preventing the marring of furniture by a dripping sweat formed on the outer surface of the glass and it comprises a non-frangible dished tray of non-porous material in which is placed an insert or pad comprising a base having a knap of highly porous material on one side thereof which will readily absorb the condensation or sweat running down the outside of a glass resting upon the knap of the insert as well as absorbing slight spillages. The insert has a coating of pliable substantially non-porous, non-moisture absorbing material on its under surface which engages the interior of the base of the dished body. This coating prevents slippage of the insert upon movement of the glass. The entire insert is readily removable from the non-frangible body and may be at desired intervals placed in an automatic clothes washer or otherwise washed to completely clease it, and it may be dried in an ordinary clothes dryer or any other suitable manner and thus should prevent mold and musty odors from the insert with its continuous use

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3,797,797

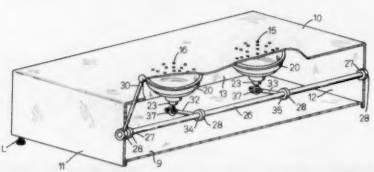
VACUUM HOLDING TABLE FOR A PHOTOGRAPHIC PLATE OR THE LIKE

James J. Keller, Rt. 1, Mt. Horeb, Wis.

Filed Sept. 25, 1972, Ser. No. 291,946

Int. Cl. F16b *47/00*; **G03b** *27/60*

U.S. Cl. 248—362 **1 Claim**



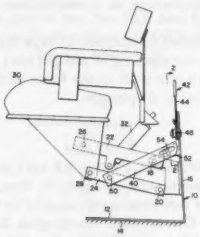
A vacuum holding table for holding photographic plates or the like while the plate is being processed. The table includes a lever by means of which the operator can quickly load the plate and hold it securely on the table without further attention and then can quickly and positively remove the plate from the table.

3,797,798

VEHICLE SEAT WITH SUSPENSION AND SELECTIVE SUSPENSION LOCK-OUT

Michael Keith Magruder, Waterloo, and Terrill Wayne Woods, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 26, 1972, Ser. No. 265,976
Int. Cl. B60n 1/02
U.S. Cl. 248—399 6 Claims



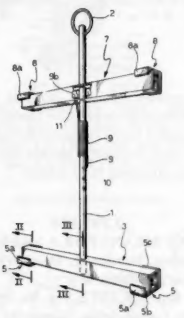
A resiliently suspended vehicle seat with means for selectively locking out the resiliency of the suspension to fix the seat against both up and down movement.

3,797,799

DEVICE FOR SUPPORTING MIRRORS, PLATES, PANELS AND THE LIKE

Delmo Maggia, Via Servais 200/G/6, Turin, Italy

Filed Mar. 21, 1973, Ser. No. 343,335
Claims priority, application Italy, Mar. 28, 1972, 53053/72
Int. Cl. A47g 1/16
U.S. Cl. 248—491 5 Claims



This invention provides a support device for a mirror or like flat member in which upper and lower horizontal edges of the flat member are engaged by hook portions carried by upper and lower cross pieces mounted on a common vertical support rod by which the device is suspended. The upper cross piece is spring urged downwardly to enable the device to grip flat members of different heights.

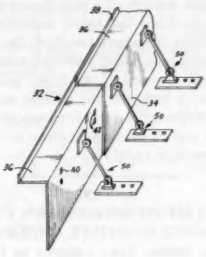
3,797,800

PORTABLE REUSABLE FORM FOR CONCRETE FOUNDATIONS

Elliott C. Loy, 400 Woodfin, Houston, Tex.

Filed June 2, 1971, Ser. No. 149,198
Int. Cl. B28b 7/22
U.S. Cl. 249—13 12 Claims

A portable form for concrete foundations and the like according to the present invention comprises a plurality of form sections each being provided with a substantially planar vertical wall defining the outer wall portion of such foundations. Each wall section includes a separatable horizontal wall disposed substantially normal to the vertical wall and a vertical flange cooperating with the horizontal wall to define a brick ledge in the outer periphery of the foundation. The form is provided with interfitting corner sections that cooperate to define brick ledges at the corners of the foundation. The form is supported in place by plurality of adjustable support devices



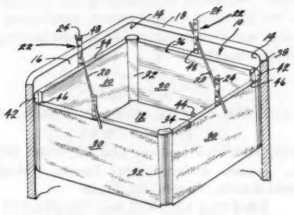
that are secured to the form sections at various positions thereon. Each of the support devices comprises a base that is secured to the ground in any desirable manner and includes an adjustable support that is manipulatable to adjust the height and position of the form sections as desired to achieve proper form configuration. The support devices may be employed to extract the concrete forms subsequent to hardening of the concrete material defining the foundation.

3,797,801

FOUR-PIECE HOT TOP WITH FOLDABLE SUBASSEMBLIES

Fred A. Mueller, Canon City, Colo., assignor to Colorado Refractories Corporation, Canon City, Colo.

Filed Aug. 11, 1971, Ser. No. 170,699
Int. Cl. B22d 7/10
U.S. Cl. 249—197 2 Claims



This invention relates to a hot top of the type used to insulate the reservoir of an ingot mold into which molten steel is poured that consists of a pair of foldable wall section and corner post subassemblies which cooperate with one another and with two corner posts defining keys for the latter to produce a hollow truncated generally pyramidal enclosure. Each of the foldable subassemblies includes a single large fabric panel to one face of which is fastened in edge-to-edge relation a series of three wall sections while to the other face is attached a corner block opposite the middle of the three wall sections. The three sections are all generally trapezoidal with their adjacent edges oppositely inclined so as to mate in folded relation using the fabric panel as a hinge and define two 45° corners. The free edges of the outboard sections cooperate in a similar way with the adjacent edges of the corner posts. A novel hanger subassembly is provided on each of the two wall

section and corner post subassemblies which includes a pair of apertures strap hangers molded in place between the fabric panel and each of the two end wall sections. The lower projecting ends of the hangers lock beneath their respective wall sections while the upper projecting apertured ends thereof receive rods that extend diagonally in supporting relation across the inner of the rim of the ingot mold reservoir. The invention also contemplates the method of making the hot top foldable subassemblies which includes the steps of impregnating the fabric panel with a heat-resistant slurry, placing the wetted panel in the bottom of a pan, laying the hanger straps atop the panel, forming the three individual wall sections along with the joints therebetween atop the fabric panel and straps, curing the fabric panel and wall sections, fastening a corner block to the outside of the fabric panel in position to cooperate therewith and with the middle wall section on the inside thereof to form an integral corner post, and bending the projecting lower end of the hanger strap to form a hook supporting the wall section on its face.

3,797,802

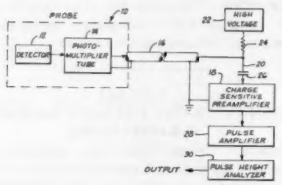
RADIATION MEASURING SYSTEM UTILIZING A CHARGE SENSITIVE AMPLIFIER

Robert S. Foote, Dallas, Tex., assignor to Geodata International, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 37,582, May 15, 1970, abandoned. This application Jan. 21, 1972, Ser. No. 219,734

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 R **8 Claims**



The method and apparatus for measuring pulsed electric charges, such as the charges from a radiation detection device, which charges originate at a point remote from the place of measurement, including transmitting the charges from their source to the place of measurement, amplifying the charges with a charge sensitive preamplifier and measuring the characteristics of the charges.

3,797,803

CONTROL VALVE ASSEMBLY FOR A GAS PASSAGEWAY

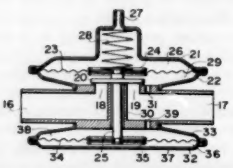
Kenji Goto; Hidetaka Nohira, and Kiyohiko Mizuno, all of Susono, Japan, assignors to Toyota Jidoshiya Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed May 12, 1972, Ser. No. 252,577

Claims priority, application Japan, May 15, 1971, 46-39028

Int. Cl. F16k *31/12*

U.S. Cl. 251—61.5 **2 Claims**



A control valve assembly for a passageway for gases.

The device comprises a valve body adapted to open and close communication between a gas inlet duct and a gas outlet duct, a diaphragm having the valve body attached to a middle portion thereof for resiliently urging the valve body normally to move into engagement with an opening of the gas inlet duct to close the same, compensation apparatus provided in one portion of a diaphragm chamber in which the valve body is disposed for eliminating or minimizing the influence of the pressure of gases on a surface of the diaphragm on which the valve body is mounted, and apparatus for permitting the other portion of the diaphragm chamber which is disposed opposite to the first mentioned diaphragm chamber portion with respect to the diaphragm to communicate with a negative pressure source.

The force of resilience adapted to urge the valve body into engagement with the opening of the gas inlet duct to close the same is set at the same level as the force of negative pressure adapted to operate the diaphragm.

3,797,804

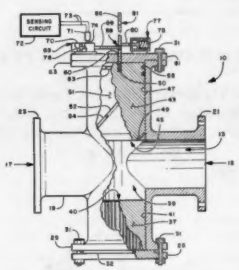
ATMOSPHERIC CLOSURE MECHANISM

Richard E. Ashbaugh, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 6, 1973, Ser. No. 330,153

Int. Cl. F16k *31/44*

U.S. Cl. 251—68 **5 Claims**



Apparatus for rapidly closing a conduit, using atmospheric pressure for effecting movement of a closure upon release of a retaining pin, the latter being released by electrically activated explosive means, and crushable means for absorbing kinetic energy and thereby stopping the closure.

3,797,805

SEALING MEANS FOR A VALVE STEM

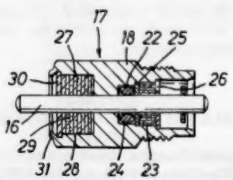
Helmer Trost Nielsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Sept. 25, 1972, Ser. No. 291,764

Claims priority, application Germany, Oct. 12, 1971, 2150788

Int. Cl. F16k *41/04*

U.S. Cl. 251—214 **7 Claims**



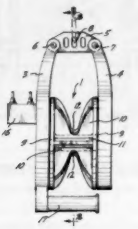
The invention relates to a thermostatic valve assembly for controlling the flow of a liquid therethrough. The assembly has a secondary seal for its valve stem which is made of a

material which expands when contacted by a leaking quantity of the liquid being controlled. The expansion of the seal inhibits the leakage and the movement of the valve closure member. This manifestation of malfunctioning is a signal that the primary seal has become defective.

3,797,806
SEINE-HAULING BLOCK

Lawrence E. Demmert, 3408 Redwood Ave., Bellingham, Wash.

Continuation-in-part of Ser. No. 701, Jan. 5, 1970, Pat. No. 3,535,811. This application June 28, 1971, Ser. No. 157,334
Int. Cl. B66d 1/36
U.S. Cl. 254—192 **9 Claims**

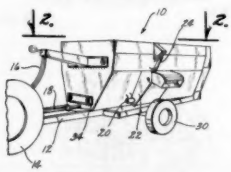


The floats of a seine are lodged in pockets formed between radial webs on the sheave of a seine-hauling block, which serve as abutments to grip the floats for increasing the traction on a seine in hauling it. The seine netting passes through slots in axial alignment with each radial web. Adjacent slots may be offset axially to afford a serpentine path for the seine around the sheave. The sheave is powered by a hydraulic motor. A guard roller mounted below the sheave will strip from the pockets floats lodged in them which are not released before reaching the roller.

3,797,807
MATERIAL MIXER

Norman A. Behrens, Columbus, Nebr., assignor to Creston Manufacturing Co., Inc., Creston, Nebr.

Filed Sept. 13, 1971, Ser. No. 179,795
Int. Cl. B01f 7/04, 7/08
U.S. Cl. 259—41 **5 Claims**

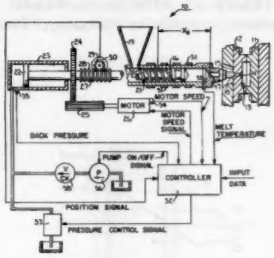


A mixing and dispensing wagon having side-by-side lower longitudinal augers moving material away from the end walls and a pair of upper longitudinal augers moving material toward the end walls such that the material is recirculated for mixing away from the ends on the bottom, upwardly and toward the ends at the top, then downwardly and back to the center area. A discharge conveyer is in communication with the material chamber near the lateral center of the chamber on a level with the lower augers. The upper augers have paddles at the ends adjacent the end walls thereby preventing compacting of the material against the end walls and also to force the material downwardly. One lower conveyer includes conveyer portions spaced apart at its inner ends by a plurality of paddles.

3,797,808
PLASTICATION CONTROL SYSTEM FOR INJECTION MOLDING MACHINES

Carlton Y. W. Ma, and John W. Peter, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 83,072, Oct. 22, 1970, Pat. No. 3,721,512. This application Nov. 17, 1972, Ser. No. 307,294
Int. Cl. B29f 1/04; B29b 1/10
U.S. Cl. 259—191 **3 Claims**

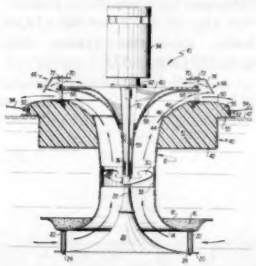


A plastication control system for controlling the shot size and plastication time of an injection molding machine. The control system includes a computer which calculates the screw speed based on the operating conditions of the immediately preceding cycle in order to control the plastication time to a predetermined value. Additionally, the system controls the back pressure applied to the rotating screw in order to maintain the melt temperature of the plastic at the forward end of the barrel at a predetermined value.

3,797,809
AERATOR APPARATUS

Garland S. Sydnor, Jr., Richmond, Va., assignor to Sydnor Hydrodynamics Inc., Richmond, Va.

Filed Apr. 20, 1972, Ser. No. 245,980
Int. Cl. B01f 3/04
U.S. Cl. 261—91 **30 Claims**



An aerator apparatus utilizing a top-mounted motor which provides a substantially streamlined flow of liquids from its input to its output. A hollow central frame member or volute is provided with a discontinuity in the form of an outwardly extending circumferential shoulder portion located substantially at the flotation line whereby liquids pumped with the central frame member are separated from contact therewith and exposed to atmospheric pressure. A principal deflector means is so formed vis-a-vis the inner shell for the flotation means that a diverging throat area is provided. The fluids leave the aerator apparatus substantially horizontally over the top of the flotation means. The latter is provided with a contour which corresponds substantially with the trajectory of the

liquids expelled thereover. An auxiliary deflector means returns a small amount of the expelled liquids in order to provide lubrication for the bearings of a propeller driven by the motor.

3,797,810

GAS AND LIQUID CONTACT APPARATUS

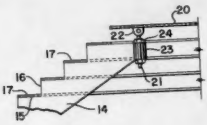
Heinz Wolff, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H, Bochum, Germany

Filed Dec. 3, 1970, Ser. No. 94,641

Claims priority, application Germany, Dec. 8, 1969, 1961426

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **7 Claims**



A horizontal outer ring is sealed to the inner surface of the side wall of a vertical shell. Above this ring is an upper series of vertically spaced horizontal rings decreasing in size upwardly. Above the top ring there is a horizontal top plate that is smaller than the top ring. Below the outer ring there is a lower series of vertically spaced horizontal rings decreasing in size downwardly. Provision is made for continuously delivering liquid to the top plate in the shell, and the rings are dimensioned to cause the liquid leaving the edge of the top plate to cascade down the upper series of rings over their outer edges and then down the lower series of rings over their inner edges while a gas is flowing upwardly through the shell and back and forth through the cascading liquid.

3,797,811

MASS EXCHANGE COLUMNS

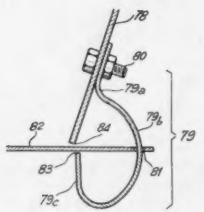
Yves Jullien, and Jean-Charles Cicile, both of Brioude, Haute-Loire, France, assignors to Societe Peur L'Equipment Des Industries Chimiques Speichim, Paris, France

Filed Aug. 25, 1971, Ser. No. 174,692

Claims priority, application France, Aug. 31, 1970, 70.31649; Aug. 4, 1971, 71.28573

Int. Cl. B01d *3/20*

U.S. Cl. 261—114 R **2 Claims**



An overflow for an exchange column of the type used in the exchange of phases having different densities. The overflow including a vertically disposed collection passage and a shut-off device adapted to automatically open in dependence of a function of the heavier phase in collection passage. The shut-off device is in one embodiment in the form of a flap valve.

3,797,812

WASTE GAS FLOW SYSTEM FOR METAL-TREATING APPARATUS

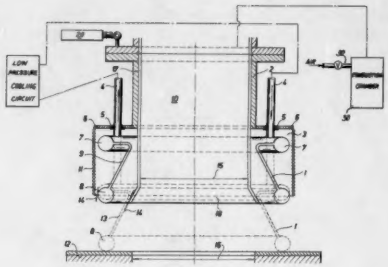
Stefan Ivessa, Leibnitz, Steiermark, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria

Filed Sept. 6, 1972, Ser. No. 286,535

Claims priority, application Austria, Sept. 9, 1971, 7825/71

Int. Cl. C21c *5/40*

U.S. Cl. 266—16 **16 Claims**



A metal-treating apparatus which includes a vessel in which metal is refined and a waste-gas conduit which receives gas issuing from the vessel. Between the latter conduit and the top end of the vessel is a ring assembly which is movable along the end of the waste-gas conduit adjacent the vessel between a closed position engaging the vessel and an open position spaced therefrom. A structure which surrounds the waste-gas conduit defines a chamber in which the top end of the ring assembly is located even when the latter is in its closed position, and in this closed position the ring assembly defines with this latter structure and with the waste-gas conduit a pair of gaps through which any waste gas which seeks to escape while flowing into the waste-gas conduit must flow while changing its direction at least twice.

3,797,813

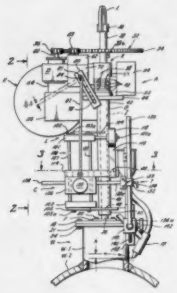
CONTROL APPARATUS FOR METALWORKING TOOLS

Vernon H. Roesel, Rt. 1, Box 131M, Cypress, Tex.

Continuation-in-part of Ser. No. 100,573, Dec. 22, 1970, Pat. No. 3,741,555. This application May 26, 1972, Ser. No. 257,440

Int. Cl. B23k *7/04*, *37/02*

U.S. Cl. 266—23 M **10 Claims**



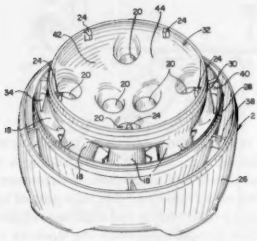
A new and improved apparatus for controlling the movement and spacing of a metalworking tool with respect to workpieces.

3,797,814

OXYGEN LANCE WITH MULTI-ORIFICED NOZZLE

Nicholas M. Rymarchyk, Jr., Pittsburgh; Walter V. Berry, Lake San Marcos, and William W. Berry, Pittsburgh, all of Pa., assignors to Berry Metal Company, Harmony, Pa.

Filed Mar. 27, 1972, Ser. No. 238,136
Int. Cl. C21c 7/00
U.S. Cl. 266—34 L 11 Claims



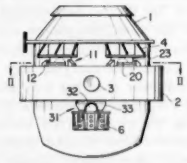
An oxygen lance with a multi-orificed nozzle or tip in the form of a casting where the tip has a plurality of three oxygen orifices about an inner circumference or ring of the nozzle interface or outer wall and a plurality of five oxygen orifices on a concentric outer circumference of the nozzle interface where each orifice of a ring is symmetrical to the other in the same ring but not in the other ring but the spacing of two adjacent orifices on different rings presenting an angle between two nozzle face radii that pass through the centers of two adjacent holes on different adjacent concentric circles that is a maximum angle for least jet spray interference between such two orifices and maximum cooling of the nozzle interface and wherein the nozzle water shelf above the interface is ported to the inside of the nozzle interface to allow coolant within the interior of the nozzle between the oxygen passages as well as on the outer side of the passages of the ringed orifices.

3,797,815

APPARATUS FOR SUPPORTING THE BODY OF THE CONVERTER

Masahiko Seki; Takayuki Imaida, and Hiroyoshi Funakoshi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,131
Claims priority, application Japan, May 19, 1971, 46-40908
Int. Cl. C21c 5/50
U.S. Cl. 266—36 P 3 Claims



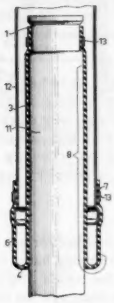
An apparatus for supporting the body of a converter which is supported on a base stand and has a pair of trunnion shafts provided on a trunnion ring held between an upper bracket and a lower bracket fixed on the outside of the body, which comprises a plurality of upper supporting devices each having means freely movable therein and having one end of each supporting device set on the upper bracket and the other end set on a sliding base plate in a guiding groove provided on the upper surface of the trunnion ring and extending in the radial direction of the body, and a plurality of lower supporting devices having a gliding-in part of semi-circular cross-section allowing for a free gliding movement in the radial direction of the body and having one end set on the lower bracket and the other end set on the trunnion ring.

3,797,816

AIR SPRING BELLOWS

Hartwig Voss, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Oct. 14, 1971, Ser. No. 189,384
Claims priority, application Germany, Oct. 15, 1970, 2050613
Int. Cl. F16f 9/36
U.S. Cl. 267—65 R 1 Claim



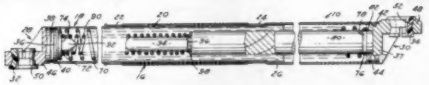
An air spring bellows with two connecting sections of clearly different diameters and a conical portion interconnecting said two connecting sections while the section with the shorter diameter is connected to a metallic plunger member and the section with the greater diameter is connected to a cylinder member, the arrangement being such that a portion of the section with the smaller diameter is in response to a relative movement between said plunger and cylinder members cuffed-over another portion of the same section while the cuffed-over portion is radially outwardly spaced from the non-cuffed-over portion of the same section.

3,797,817

CLOSURE COUNTERBALANCE

Robert J. Deisenroth, Elkhart, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.

Filed June 22, 1972, Ser. No. 265,334
Int. Cl. F16f 3/04
U.S. Cl. 267—71 9 Claims



The closure counterbalance is for attachment as a strut between a movable closure which is hingedly fastened to a support structure. The counterbalance includes a pair of tubular members telescopingly connected together in sliding relationship. A compression coil spring within the members urges the members apart. A wooden rod is provided within the tubular members. The wooden rod fixed extends into the spring in sliding relationship therewith to support and guide the spring and prevent the spring from buckling against the inner surface of the tubular members.

3,797,818
HYDRAULIC TELESCOPIC SHOCK ABSORBER

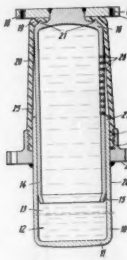
Jean Herbert Willich, and Johannes Jasper de Baan, both of Ennepetal, Germany, assignors to Firma August Bilstein, Ennepetal-Altenvoerde, Germany

Filed Feb. 15, 1972, Ser. No. 226,534

Claims priority, application Germany, July 14, 1971, 2135000

Int. Cl. B60r *19/06*; **F16f** *5/00, 9/08*

U.S. Cl. 267—122 **11 Claims**



An hydraulic shock absorber for use for example in absorbing impacts on motor vehicles has a damping characteristic which is dependent on the stroke of a telescopic deformation but not on velocity of impact and the deformation is normally temporary due to restorative properties of the shock absorber.

The shock absorber basically comprises a relatively movable piston and barrel which are filled with a damping liquid and which are at least partially surrounded by resilient bellows which accommodate displaced liquid on impact.

The shock absorber includes throttling means in the form of bores and/or slots which may be located in the piston and/or in the barrel.

3,797,819
SUPPORTING TABLE FOR PATIENTS

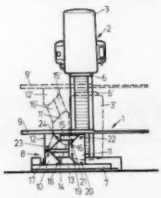
Winfried Platz, Rathsberg, and Heinz Ludke, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 16, 1973, Ser. No. 324,069

Claims priority, application Germany, Jan. 15, 1973, 2201921

Int. Cl. A47b *9/00*

U.S. Cl. 269—322 **4 Claims**



A supporting table for patients has between its base and the table plate a height raising and lowering mechanism which includes rods forming two parallelogram sections connected one behind the other, a connecting member mechanically fixing the upper bearing of the lower section relatively to the lower bearing of the upper section, a motor connected with one of these sections and a power transmitting connection between these sections.

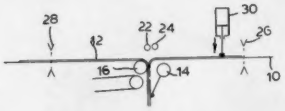
3,797,820
SELF-CENTERING CROSSFOLDER

Derrick McDermott, Brighouse, England, assignor to Thomas Broadbent & Sons Limited, Yorkshire, England

Filed Mar. 14, 1972, Ser. No. 234,519

Int. Cl. B65h *45/04*

U.S. Cl. 270—69 **6 Claims**



The present invention relates to a laundry cross-folding machine and also to a method of cross-folding a workpiece. The machine includes a pair of workpiece detectors operatively connected both to a clamp and one of a pair of squeeze rollers. A workpiece to be folded is fed in offset relationship relative to a fold plane disposed between the squeeze rollers. The shorter side of the workpiece is clamped whilst the longer side introduced into the fold plane. Thereafter, once the workpiece has been located in a correct position, the clamp is released so that the whole of the workpiece is folded into the fold plane.

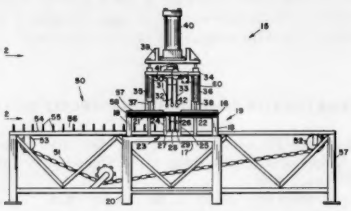
3,797,821
FOLDING DEVICE

William N. Crenshaw, Jr., St. Paul, Ind., assignor to KCL Corporation, Shelbyville, Ind.

Filed Nov. 1, 1971, Ser. No. 194,175

Int. Cl. B65h *45/20*

U.S. Cl. 270—79 **5 Claims**



A device for folding sheets into a pleated condition and transferring the sheets to a conveyor. A platen has a plurality of plates movable through slots formed in a platform for receiving a stack of flat sheets. Subsequent to the movement of the platen into the slots, the platen is moved lengthwise through the slots forcing the pleated sheets therefrom and into a compartment of a conveyor carrying tray. The platen is then raised from the conveyor carrying tray and returned to the original position. Finger-like members are secured to the plates for engaging the edges of the pleated sheets for the transverse movement of the pleated sheets to the compartment of the conveyor carrying tray. A pair of cylinder motors are mounted to the frame of the folding device to controllably move the platen.

3,797,822
COUPON INSERTER

Paul L. Anderson, P.O. Box 531, Alexandria, Minn.

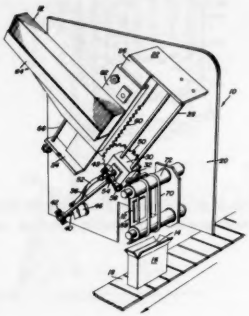
Filed Apr. 19, 1972, Ser. No. 245,487

Int. Cl. B65h *3/08*

U.S. Cl. 271—12 **3 Claims**

A mechanism to pick up a coupon, sheet of paper or other similar smooth surface object from a supply source and to

transfer the coupon to a predetermined position and feed it into a container or otherwise deposit it in a desired position. The mechanism includes a reciprocatory slide block that is guided for reciprocation and driven by an eccentric crank assembly. Mounted on the slide block is an oscillating shaft having a vacuum pickup cup mounted thereon which is oscillated in response to reciprocation of the slide block due to a pinion gear carried by the shaft in meshing engagement with a rack



gear that is stationarily positioned in parallel relation to the path of movement of the slide block for movement of the suction cup or suction tip in a cycloidal path that is continuous and repetitive. The coupon or other object is discharged from the suction tip in a tangential direction of the path of movement of the suction tip by employing a transfer unit, such as an endless belt unit to discharge the coupon into a container positioned under the discharge end thereof.

3,797,823

PHOTOGRAPHIC APPARATUS

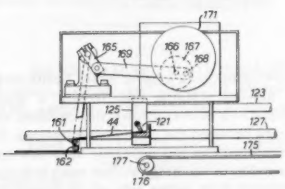
Charles William Clark, Kings Grove, Maidenhead, Berkshire, England

Filed Mar. 27, 1972, Ser. No. 238,122

Claims priority, application Great Britain, Mar. 29, 1971, 8022/71

Int. Cl. B65h *29/64*

U.S. Cl. 271—64 **11 Claims**



Mechanical means for separating an image-receiving sheet from a more flexible photo-sensitive sheet after image transfer has occurred, the means comprising two rods around which the more flexible sheet is drawn by a power-driven gripper and around which the less flexible sheet is unable to follow.

3,797,824

EXERCISE MACHINE

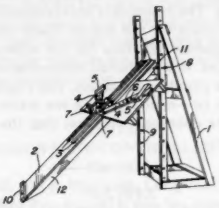
Glen R. Osbourne, Burlington, Iowa, assignor to Burlington-Cornwall Industries Incorporated, Burlington, Iowa

Filed Mar. 31, 1971, Ser. No. 129,780

Int. Cl. A63b *23/02*

U.S. Cl. 272—57 J **2 Claims**

An exercise machine having a stand to support a board containing tracks and angular tracks along which double wheel grips may be rolled. One end of the board is moveable up and down the stand to give different angles of slant, thus requiring different degrees of difficulty in performing the exercise.



There are stops that may be placed on the tracks to require different degrees of difficulty in performing the exercises at the different angles of slant of the board.

3,797,825

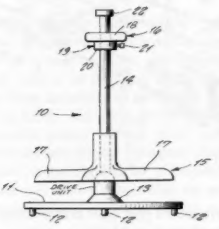
TWO-LEVEL ROTATING-ARM JUMPING AND DUCKING EXERCISE DEVICE

Irene J. Barrett, 203 Pidgeon Hill Rd., Huntington, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,218

Int. Cl. A63b *5/22*

U.S. Cl. 272—74 **3 Claims**



A device for physical culture, and which aids in developing the body muscles by promoting jumping and ducking exercises. The device includes the combination of a platform supported on legs, a mount secured on the platform, and a vertical shaft supported on the mount. Held by the shaft at its lower end is a pair of radially extending arms for being jumped across. Supported by the shaft near its upper end is a pair of radially extending arms for a user to duck his head under. A drive unit rotates both pairs of arms.

3,797,826

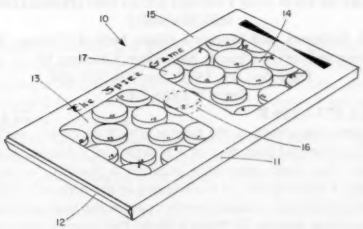
SPICE GAME

Robert L. Horner, 1054 Loria Ave., Princeton, Ill.

Filed Oct. 6, 1972, Ser. No. 295,502

Int. Cl. A63f *9/00*

U.S. Cl. 273—1 R **5 Claims**



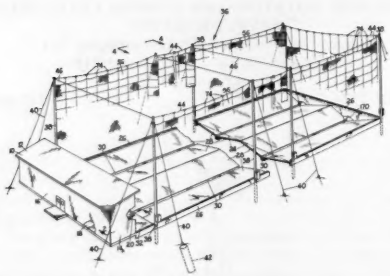
A spice game wherein the objective is to correctly guess all of the spices of the game without smelling or touching the

spices. The game includes a plurality of sealed containers. Each container has a single spice contained therein which is different from the spices in the remaining containers. Each container is sealed to prevent a player from touching or smelling the spice. The containers are transparent to allow for the visual observation of the spices. Each container has a number marked thereon to allow for the subsequent identification of the spices. In a preferred embodiment there are 24 different spices in circular containers. The containers are in a flat package with two openings with the width of the frame portion around the openings being less than the diameter of a circular container.

3,797,827
LAKE GOLF BALL DRIVING RANGE

Dean K. Child, 1618 N. Vancouver Ave., Portland, Oreg.

Filed July 2, 1971, Ser. No. 159,296
Int. Cl. A63b *67/02*
U.S. Cl. 273—35 R **8 Claims**



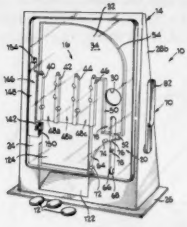
A lake is used to receive golf balls driven from tee platforms and has a transversely inclined bottom portion extending longitudinally. A longitudinally extending power operated ball pickup conveyor is disposed at the bottom of the inclined portion for receiving the balls and conveying them toward the tee platforms. This conveyor is formed of a material having a density only slightly greater than water. A distributing conveyor receives the balls from the pickup conveyor and feeds the balls to the tee platforms. A plurality of upright tubes are employed in the distributing conveyor which hold the ball in single line in abutting engagement for positive flow. A fence is provided around the lake which is movable up and down and which has an overload device adapted to release lift mechanism for the fence when the fence is subjected to an abnormal weight.

3,797,828
LAUNCHER AND TARGETS HAVING OVERLOAD MECHANISM

Paul J. Ishikawa, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 20, 1972, Ser. No. 316,654
Int. Cl. A63b *7/02*
U.S. Cl. 273—126 R **22 Claims**

A game apparatus of the type in which an object, such as a disc, is projected into one of a plurality of different areas or spaces. The game apparatus includes a plurality of discs, a housing, a scoring area in the housing in the form of a plurality of vertical slotted compartments open at the top and bottom. A launching station is spaced from the scoring area and a launcher is provided at the launching station to project the disc toward the scoring area. Each compartment has means associated therewith for holding one disc therein at a time and for automatically releasing the disc whenever a second disc is received in that compartment. By providing indicia on the

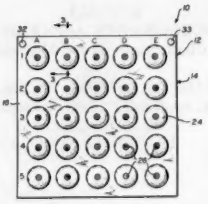


discs, a game such as a slot machine may be simulated, with the launcher having a manipulatable lever on the outside of the housing.

3,797,829
UPRIGHT GAME BOARD HAVING ROTATABLY MOUNTED INDICIA-BEARING BALLS

Aaron Heller, 23 W. 68 St., New York, N.Y.

Filed May 9, 1972, Ser. No. 251,690
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 B **7 Claims**



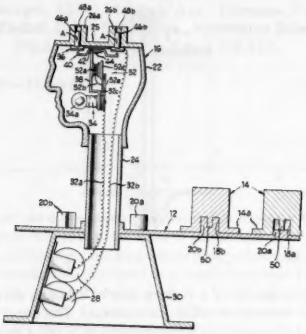
A game device comprising a game board positioned upright between two playing stations and having a plurality of openings arranged in a series of rows and columns extending through the board between the two playing stations. A plurality of indicia bearing balls are rotatably mounted within the board in the plurality of openings so that each ball may be independently rotated from either side of the board to display certain indicia, such as color spots, marked thereon. In playing the game, each player tries to align spots of the same color in any one row or column, or along a diagonal. The indicia on each ball are arranged in pairs with the indicia of each pair being different from each other and in diametrically opposed relation to one another. Also, and considering a common indicia or color spot on every two next adjacent balls (whether in a row, column or diagonal), the color spot diametrically opposed to the common color spot is different on one ball from that on the next adjacent ball. Thus, the pattern of indicia or color spots being formed on one side of the board by one player is different from the pattern being formed on the other side of the board by the other player. A transparent overlay is preferably removably mounted on the game board spaced from the balls and extending thereover for purposes of checking the alignment of the color spots of the alleged winner of the game.

3,797,830

BOARD GAME APPARATUS

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 6, 1972, Ser. No. 215,775
Int. Cl. A63f 3/00
U.S. Cl. 273—131 A **16 Claims**



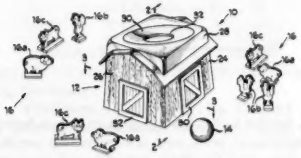
A game apparatus which includes a playing board having a plurality of playing positions, a plurality of three-dimensional playing pieces having differently shaped sockets hidden on the underside thereof, whereby the shape of the socket on the underside of a selected playing piece must be guessed by a player of the game before the playing piece may be played on the playing board, and a test station where the correctness of a player's guess as to the shape of the socket on the underside of the selected playing piece may be determined without looking at the underside of the playing piece. The test station has a plurality of bosses having different geometric shapes to match the sockets on the underside of the playing pieces so that a player tests the correctness of his guess as to the shape of a socket by positioning the respective playing piece over a selected one of the bosses at the test station which the player believes to be of the shape of the socket on the underside of the selected playing piece. In the form shown, a boss is disposed at each of the playing positions on the playing board, the bosses having different geometric shapes for receiving the playing pieces in one or more playing positions.

3,797,831

RANDOM DISPENSATION GAME

Marvin I. Glass, Chicago, and Howard J. Morrison, Deerfield, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed June 22, 1972, Ser. No. 265,322
Int. Cl. A63f 7/10
U.S. Cl. 273—138 R **2 Claims**



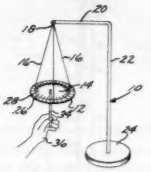
A random dispensation game characterized by the provision of a housing simulating a barn-like structure having a concave top portion with a central opening therein, and conical dispensing member below the central opening, a ball-like playing member intended to be deposited upon the concave portion of the top member and allowed to drop through the opening onto the dispensing member. A plurality of openings in the walls of the structure are in communication with the dispensing member. A door which is opened in response to a playing member striking the interior thereof is disposed over each of the wall openings and plural game elements are provided, which game elements are acquired during play of the game in accordance with the movable door through which the ball-like playing member exits.

3,797,832

SUB-CONSCIOUS MIND CONTROLLED AMUSEMENT DEVICE

Dale D. Benwell, 455 E. Plymouth, Long Beach, Calif.

Filed Dec. 14, 1972, Ser. No. 314,988
Int. Cl. A63f 9/18
U.S. Cl. 273—161 **8 Claims**



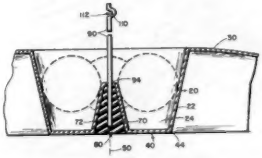
An amusement device that includes an indicia-bearing curved strip that is supported in a horizontal plane at an elevation sufficient for a user to insert an upright elongate object such as a wand, pencil, or the like, within the confines of the strip. The user then attempts to cause the elongate object so held to move towards and away from the various indicia to answer a question posed by the user, either mentally or audibly. The movement of the elongate object and the hand holding the latter, is believed to be in response to mental concentration of the user to the extent that the subconscious mind takes over as may occur in a form of self-hypnosis.

3,797,833

INDOOR-OUTDOOR GOLF GAME DEVICE

Clair E. Rokusek, 4830 S. 137th, No. 8, Millard, Nebr.

Continuation of Ser. No. 83,144, Oct. 22, 1970, abandoned.
This application Oct. 10, 1972, Ser. No. 296,219
Int. Cl. A63b 57/00
U.S. Cl. 273—178 R **16 Claims**



An indoor-outdoor golf game device having a golf cup portion of the type having upwardly and inwardly inclining surface portions for guiding balls into its main opening, the cup being shaped for nesting with like cups for ease of storage in the home when not in use.

A flag and flag post assembly adapted to fit through the cup portion and an adapter receivable in a recess in the cup portion for securing the flag post thereto when the device is used indoors.

ERRATUM

For Class 273—128 R see:
Patent No. 3,797,057

3,797,834

RECORD-PLAYER FOR CONTINUOUS PLAY

Yoshio Takahashi; Kunio Abe, and Toyonori Igata, all of Shizuoka, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,602

Claims priority, application Japan, Dec. 30, 1970, 45-127171

Int. Cl. G11b *17/04, 17/12*

U.S. Cl. 274—10 R 4 Claims

A record-player for continuous play includes, in combination, a center spindle with a drive shaft for supporting record disks to be played in its upper section, a rotary cam for controlling the drive shaft to cause disks to fall down one-by-one to a play station upon completion of playing of one disk and a sensing mechanism for sensing disks not played supported by the center spindle to control the rotary cam.

3,797,835

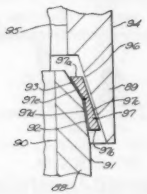
HIGH PRESSURE JOINT AND SEALING RING THEREFOR

Byrom T. Wehner, Houston, Tex., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 21, 1972, Ser. No. 246,187

Int. Cl. F16j *15/08*

U.S. Cl. 277—171 6 Claims



A high pressure joint between fluid carrying conduits and sealing ring therefor. The conduits are of circular cross section and of the type wherein the end of a first one of the conduits is received within the end of a second one of the conduits to form the joint. The sealing ring is located between the exterior surface of the end of the first conduit and the interior surface of the end of the second conduit. The sealing ring and the last mentioned exterior and interior surfaces are so configured that a fluid tight seal is achieved at the joint whether pressure be applied from the interior or the exterior of the joint.

3,797,836

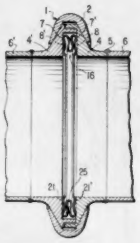
SEALING RING

Horace P. Halling, Laurel, Md., assignor to Pressure Science Inc., Beltsville, Md.

Filed Sept. 7, 1971, Ser. No. 177,966

Int. Cl. F16j *15/00, 9/20*

U.S. Cl. 277—200 6 Claims



There is disclosed a sealing ring of resilient metal approximately E-shaped in radial cross section. The outer arms of the E have a sinuous configuration and terminate in convex portions which define a primary sealing line when the sealing ring is installed in its cavity. The central arm of the E is a loop having its two sides out of contact with each other. The length of the central arm is approximately equal to the length of the outer arms at the primary sealing line.

3,797,837

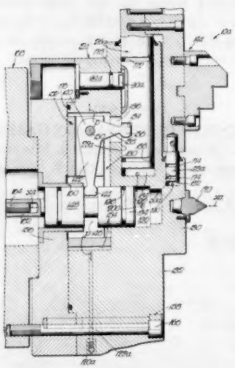
CHUCK WITH JAW-GUIDING-AND-SUPPORTING BORES

John J. Roddy, Meriden, and Linwood B. Swanson, Newington, both of Conn., assignors to Cushman Industries, Incorporated, Hartford, Conn.

Filed May 26, 1972, Ser. No. 257,280

Int. Cl. B23b *5/22*

U.S. Cl. 279—114 6 Claims



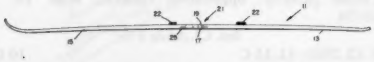
A chuck, having a chuck body with an axis, a front face and an outer periphery, jaws, and jaw-operating mechanism, of which the jaws are, for their support and guidance in the chuck body, provided with cylindrical bars which are received with a sliding fit in cylindrical bores in the chuck body that extend with their axes radially of and normal to the body axis, and are spaced from the front face of the body. The bores in the chuck body are open at the outer body periphery, and the bars extend beyond the outer body periphery to the outside of the body where they are joined with the jaws which extend

along and spaced from the front face of the body, with the jaws also having inner post extensions which are received with a sliding fit in further radial bores in a center boss on the front face of the chuck body.

3,797,838
SECTIONAL SKI

John M. Shurgot, 22312 Marjorie Ave., Torrance, Calif., and Roy D. Ruebel, 15209 Prarie Ave., Manhattan Beach, Calif.

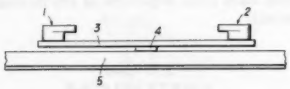
Filed Aug. 4, 1972, Ser. No. 278,018
Int. Cl. A63c *5/02*
U.S. Cl. 280—11.13 K **2 Claims**



A sectional ski disengagably connectable together in a boot support region wherein a ski boot is supported, the engaging mechanism including a necked-down plug portion of one section of ski inescapably captured in a conforming pocket recess disposed in the other ski section while a ski boot is supported on the boot support region even without the use of safety keepers passing through aligned bores in the overlapped portions of the engaging mechanism.

3,797,839
SKI BINDING

Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

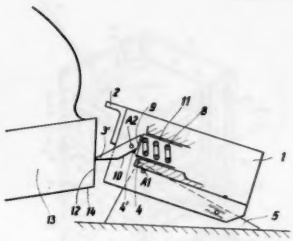
Filed Aug. 23, 1971, Ser. No. 173,835
Claims priority, application Austria, Oct. 8, 1970, 9063/70
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 C **10 Claims**

Means for fixing bindings to a ski for permitting free flexing of the ski without adversely effecting the relationship of the bindings to the ski boot. A plate is mounted on the upper side of the ski and there is provided one and only one zone of mounting therebetween. The ski bindings are then mounted on said plate for normal engagement with a ski boot. The plate is sufficiently rigid so that the bindings maintain their normal position with respect to the ski boot in spite of the flexing of the ski. Thus, as the ski flexes, the plate is fixed at one point with respect thereto and other portions thereof are free to slide longitudinally of the ski.

3,797,840
RELEASING HEEL RETAINER

Paul Unger, Bruckwieschstr, 113, 8501 Altenberg near Nuremberg, Germany

Filed Sept. 13, 1971, Ser. No. 179,662
Claims priority, application Germany, Sept. 17, 1970, 2045901
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **6 Claims**

Heel retainer for ski binding releasable against spring bias, having a housing with a sole retaining part and a stepping spur pivotable in the manner of a sliding crank about a forward, horizontal axis of a fixed base portion disposed transversely of the longitudinal extent of the ski and slidably guided in its rearward area on the fixed base portion, where at least in the retaining position the linkage point of the crank on the housing is located ahead of the linkage point of the crank on the fixed base portion, and the stepping spur is movably journalled on or in the housing and the crank is operatively connected with the stepping spur in a manner that it moves the same

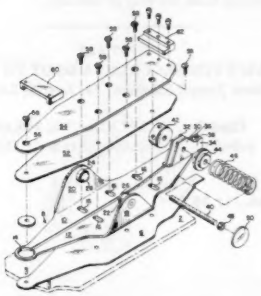


while rocking the housing from retaining position to release position out of the housing into a position suitable for engagement with the heel of the boot, and also pulls it into the housing during the rocking movement of the housing from the release position into the retaining position.

3,797,841
SAFETY BINDING

Robert R. McAusland, Seattle, Wash., assignor to Anderson & Thompson Ski Co., Seattle, Wash.

Filed June 2, 1972, Ser. No. 259,003
Int. Cl. A63c *9/086*
U.S. Cl. 280—11.35 **4 Claims**



A safety binding assembly for attachment to a ski for interaction with a ski boot, including a standardized cam means mounted to the bottom of the boot whereby the identical binding mechanism will be used regardless of the size of the boot. The binding itself includes a bifurcated plate having upstanding ears adapted to interact with the cam upon the boot and biasing means continuously urging the two legs of the plate to a proximate relationship. A second plate overlies a first plate to prevent the first plate from becoming inoperative due to compact snow and ice as well as providing a smooth, safe surface. For securement of the boot to or removal from the ski, the biasing means is overridden allowing the legs of the bifurcated plate to be separated sufficiently to allow removal of the boot mounted cam.

3,797,842

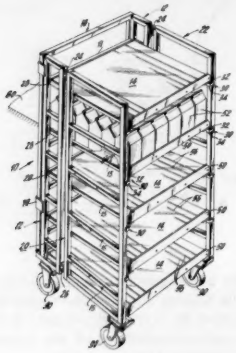
TRANSFER CART

George E. Swick, Jr., Edina; Ellsworth H. Danielson, and Theodore W. Taylor, both of St. Paul, all of Minn., assignors to The Cornelius Company, Minneapolis, Minn.

Filed June 14, 1972, Ser. No. 262,914

Int. Cl. B62b 1/00

U.S. Cl. 280—36 R **9 Claims**



The disclosure relates to a wheeled cart of the collapsible type which is intended for use in handling large food containers, such as milk containers. The cart is specifically characterized by inclined shelves which slope downwardly from the front of the cart toward the rear portion which is provided with a slidably mounted ladder or gate. The forward edge of each shelf includes a lip or partition which prevents the milk products from being pushed off the shelf. Horizontal bars or rungs of the gate are spaced such that, with the gate fully retracted, the rungs prevent the withdrawal of milk products from the rear of the cart, whereas when the gate is extended vertically upwardly, the rungs do not interfere with the enlarged openings needed for loading the milk products onto the shelves from the rear of the cart.

3,797,843

DEVICE FOR SECURING A BOOT TO A BASE

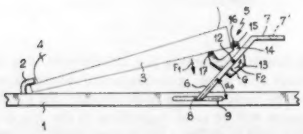
Georges Pierre Joseph Salomon, 34, Ave. de Lovercy, Annecy, France

Filed Oct. 18, 1972, Ser. No. 298,651

Claims priority, application France, Oct. 19, 1971, 71.37522

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 T **19 Claims**



The device includes: a mounting connected to the base and located externally of the space covered by the boot during the operations of putting-on and taking-off the ski; an element for retaining the boot located at least partially within the space covered by the boot and pivoting, between the positions in which it locks and releases the boot, about a horizontal axis located in the mounting and running transversely thereto; and a resilient system allowing the device to move between a position in which the boot is locked and a position in which the boot is released. This system is characterized by resilient means supported by the base and urging the mounting into a position which is raised in relation to the base and in which the boot is released, and by another resilient means acting between the mounting and the retaining element and urging the retaining element into a position in which the boot is released.

3,797,844

SKI BINDING

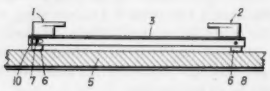
Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

Filed Aug. 13, 1971, Ser. No. 171,553

Claims priority, application Austria, Sept. 18, 1970, 8709/70

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 C **10 Claims**



Means for mounting ski binding components onto a ski in such a manner as to permit flexing of the ski without varying the distance between the ski binding components. A rigid plate is mounted in spaced relation to an upper surface of the ski by means which permit at least one end of such plate to be longitudinally translatable with respect to said ski. Preferably one end of the plate is pivoted to the ski and the other end of the plate connected thereto through a slot and pin arrangement. Thus the shape of the plate remains uneffected by flexing of the ski. The boot engaging components of the ski binding are then mounted on said plate and remain at a constant distance from each other regardless of any flexing which may occur in the ski.

3,797,845

SAFETY SKI POLE

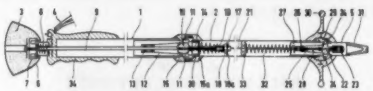
Alfred Anton Franz Kepka, and Herwig Guenther Kepka, both of Huebnerstrasse 11, 8000 Munich 19, Germany

Continuation-in-part of Ser. No. 112,888, Feb. 5, 1971, abandoned. This application Dec. 22, 1971, Ser. No. 210,728

Claims priority, application Germany, Feb. 12, 1970, 2006424

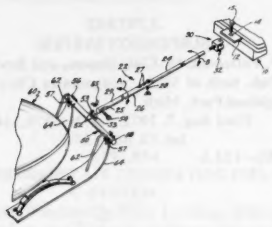
Int. Cl. A63c 11/22

U.S. Cl. 280—11.37 B **57 Claims**



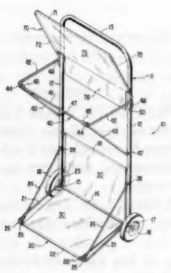
The present invention relates to a safety ski pole wherein a number of safety features are combined into an integral unit. The handle has a safety enhancing large top surface and a wrist strap which may be pulled off the handle against the force of a spring when the pole should be stuck. The pole proper comprises telescoped or hinged tubing sections which, against locking means, will yield to an axial impact applied to the handle or tip end of the pole. The tip itself is also yieldable to retract into the pole tubing in response to such impacts.

3,797,846
TOW BAR
William V. Pevic, 3185 S. 40th Ave., R.R. No. 3, Shelby, Mich.
Filed June 23, 1972, Ser. No. 265,532
Int. Cl. B60d *1/14*
U.S. Cl. 280—24 **6 Claims**



A T-shaped clamping bar includes a cross member having adjustable clamps at opposite ends thereof for attaching the cross member to front portions of the skis of a snowmobile. A tongue is pivotably coupled at one end to the cross member and extends forwardly thereof. The opposite end of the tongue includes a swivel hitch adapted to be coupled to a towing vehicle. The towing bar structure thereby permits articulation and rotation between the towed and towing vehicles to accommodate uneven terrain.

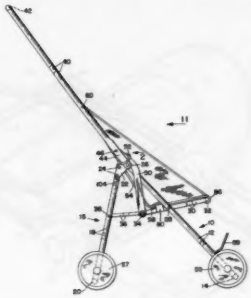
3,797,847
COLLAPSIBLE AND PORTABLE CART FOR FLEXIBLE TRASH
Eleanor Ruth Lindsey, and Gordon A. Lindsey, both of 2124-E Contez St., West Covina, Calif.
Filed Sept. 29, 1972, Ser. No. 293,399
Int. Cl. B62b *1/00*
U.S. Cl. 280—36 C **9 Claims**



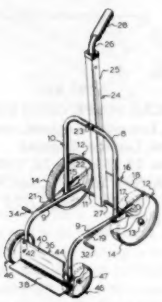
A collapsible and portable cart for trash bags comprises a wheeled U-shaped tubular main frame, a braced supporting frame carrying a web of flexible plastic material providing a platform, a U-shaped frame for holding up the upper end of the bag for loading including means for clamping the open bag edge against the outer sides of the tubular frame, and a hinged cover for closing the bag.

3,797,848
FOLDING STROLLER
Benjamin K. Burnham, Gardner, Mass., assignor to Thayer, Inc., Gardner, Mass.
Filed Oct. 10, 1972, Ser. No. 296,061
Int. Cl. B62b *1/00*
U.S. Cl. 280—36 B **20 Claims**

A light-weight folding stroller having for its principal characteristic that it is easily folded and erected by a one hand or a one arm operation. A pusher handle is pivoted with respect to a folding wheeled support having a seat, the support comprising a pair of interpivoted frames, in combination with a past dead center connection. When the pusher handle is moved to erect condition of the stroller, the connection has a part which overlaps the end of the pusher handle, receiving a gravity actuated loose ring latch which holds the entire structure erect. The rings are easily placed in an inoperative position when hung on pins extending from the sides of the pusher handle, whereupon a single push motion on the pusher handle folds the entire device. Likewise, a single pull on the pusher handle in the opposite direction erects the stroller and the ring latches are automatically actuated by gravity.



3,797,849
HAND PROPELLED CART
Donald R. Sherman, 1157 Little Oak Dr., San Jose, Calif.
Filed Feb. 5, 1973, Ser. No. 329,737
Int. Cl. B62b *7/00*
U.S. Cl. 280—47.37 **11 Claims**



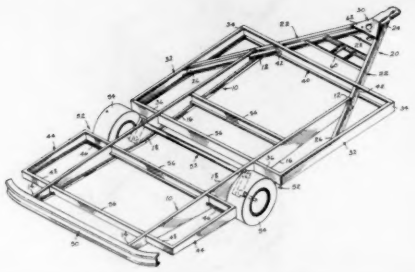
A hand propelled cart which can be adapted for holding an infant carrying seat comprises a cart frame, a principal axle having a pair of oversized wheels mounted thereon, a substantially upright handle attached to said cart frame, a pair of brake supports attached to said cart frame adjacent each of said oversize wheels, a spring friction biased U-shaped braking frame, comprising two sides and a crossarm, the sides of which are adapted to pass, respectively, through said pair of brake supports and engage therewith in a spring friction fit, the open ends of said U-shaped frame having perpendicular extensions depending therefrom, said extensions being adapted to contact the tread on said oversize wheels and serving to brake said cart, said crossarm serving to support said cart in an intermediate rest position, the center of gravity of said cart lying between said principal axle and said crossarm when said oversize wheels and said crossarm rest on the ground.

3,797,850

AXLED VEHICLE SUPPORT FRAME ASSEMBLY

Richard W. Stout, Elkhart, and Milton J. Brunk, Goshen, both of Ind., assignors to Stoutco, Inc., Bristol, Ind.

Filed June 12, 1972, Ser. No. 262,116
Int. Cl. B62d *63/08*
U.S. Cl. 280—106 T **3 Claims**



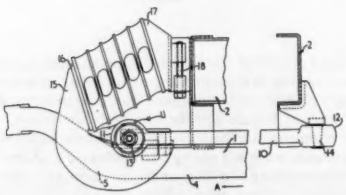
An axled vehicle support frame assembly which includes two parallel longitudinal frame members, each having front and rear end portions tapering from a middle portion of maximum depth. Each longitudinal frame member has its front end joined to a divergent frame member which constitutes a part of a trailer tongue. The frame assembly includes side rails which are spaced laterally outwardly from the longitudinal frame members and which are connected to the frame members. The side rails are positioned at or above the lower periphery of the longitudinal frame members and do not extend below such frame members.

3,797,851

VEHICLE SUSPENSION SYSTEMS

Archie John Hirst, Leicester, England, assignor to The Dunlop Company Limited, London, England

Division of Ser. No. 13,356, Feb. 24, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,704
Int. Cl. B60g *11/24*
U.S. Cl. 280—124 R **1 Claim**



A spring for use under compression and shear loading comprising a stack of rubber blocks interleaved with and bonded to parallel metal plates, successive blocks being progressively displaced in a common direction perpendicular to the direction of stacking of the blocks so that the stack has an echelon profile, at least one of the blocks being provided with a space formed in the central region thereof, of which the following is a specification.

3,797,852

SUSPENSION SYSTEM

Norman P. Patterson, St. Clair Shores, and David J. Perkins, Royal Oak, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 7, 1972, Ser. No. 278,334
Int. Cl. B60g *3/04*
U.S. Cl. 280—124 A **9 Claims**

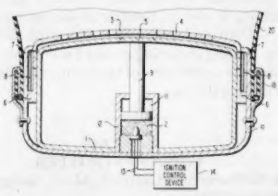
Suspension system for a vehicle, the suspension system including a shock absorber surrounded by a coil spring. The lower ends of the shock absorber and coil spring engage a lower control arm. The lower control arm is formed with a seating portion for receiving the spring and shock absorber.

3,797,853

SAFETY DEVICE FOR VEHICLES

Ernst Grosch, Hennefsieg; Heinz Gawlick, Furth; Hellmut Bendler, Erlangen-Spardorf, and Karl-Egon Flach, Cologne-Riehl, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Apr. 13, 1972, Ser. No. 243,674
Claims priority, application Germany, Apr. 17, 1971, 2118745
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **10 Claims**



A safety device for vehicles, especially automotive vehicles, having a bag disposed in front of the occupant and being inflatable in the manner of a cushion, which bag is in operative

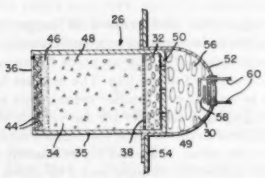
connection via a diffuser with a source of compressed gas which can be actuated by an ignition device triggered by a release element responding when a predetermined deceleration value has been exceeded, wherein the diffuser is fashioned as a cover which is resiliently connected to the source of compressed gas and is disposed in the manner of a cap over the source of compressed gas so as to be displaceable to a limited extent in a telescopic manner.

3,797,854

CRASH RESTRAINT AIR GENERATING INFLATION SYSTEM

Donald R. Poole, Woodinville; Peter L. Stang, Bellevue; James E. Mars, Vashon, and Duane A. Williams, Mercer Island, all of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed June 14, 1971, Ser. No. 152,897
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **45 Claims**



A crash restraint system for an automobile comprising an inflatable bag mounted forward of the automobile passenger seat. A bag inflating device comprising a cluster of gas generating units, each of which has a primary nitrogen generating combustion chamber to produce free nitrogen and other gas products, a second oxygen generating chamber to receive the gas mixture from the first chamber and generate free oxygen and introduce this into the gas mixture, and a tertiary chamber which functions to receive this mixture to react out, filter out and condense out undesired combustion products and also cool the remaining nitrogen-oxygen mixture to provide a "breathable air" inflating system for the bag. Alternately the first and second zones can be combined into a single nitrogen and oxygen generating zone.

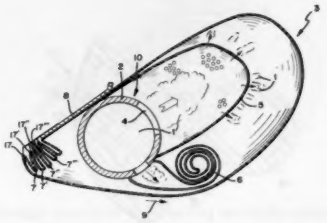
In the combustion chamber is a composition made up of an azide (e.g., sodium azide) and an oxidizer (e.g., potassium perchlorate) which upon ignition produces free nitrogen and other combustion products such as sodium oxide, free sodium and potassium chloride. In the second oxygen generating chamber is an oxygen generating composition (e.g., potassium chlorate) that liberates free oxygen into the gaseous mixture from the first combustion chamber. When these first and second zones are combined in a single nitrogen and oxygen generating zone, pellets of the nitrogen generating composition and pellets of the oxygen generating composition are placed together in a single zone or chamber. In the tertiary chamber or zone is a bed of a porous composition (e.g. aluminum oxide granules bonded with boric oxide) that reacts with, condenses and filters out the sodium, sodium oxide and potassium chloride, and permits the free nitrogen and free oxygen mixture to pass therethrough while cooling the same. Thus, the inflating gas mixture is breathable "air."

3,797,855

BAG DEPLOYMENT

Hubert A. Wright, Jr., Lexington, Mass., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,472
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **3 Claims**



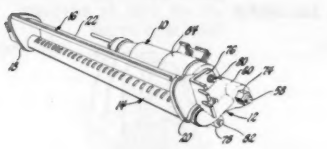
Folding of air bag or cushion restraint means so that the cushion fabric is deployed uniformly with a reduction in noise on deployment.

3,797,856

OCCUPANT RESTRAINT SYSTEM

Leo J. Matthews, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 19, 1972, Ser. No. 255,027
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **4 Claims**



An occupant restraint system includes an inflator having a generally cylindrical neck which is internally threaded. An externally threaded bushing within the outlet includes a radial rib which seats on the end wall of the neck and an axially extending threaded outlet portion having a centrally apertured radially extending wall providing an inflator outlet. An electron beam welded diaphragm closes the opening in the radial wall and is ruptured by electrically fired detonators. An internally threaded cap member is threaded on the outlet portion of the bushing and engages the rib thereof to axially and telescopically locate the cap member with respect to the wall aperture. The cap member includes a plurality of radially extending equally circumferentially spaced ports located adjacent the outlet. An externally threaded stud extends from the axial end wall of the cap member. A manifold of generally L shape includes an annular end cap portion which includes axially spaced first and second openings. The end cap portion fits over the cap member with the first opening receiving the cap member and seating on the bushing rib and the second opening receiving the stud. A nut threaded on the stud secures the manifold to the inflator. The manifold communicates with a diffuser for inflation of an inflatable occupant restraint cushion when the diaphragm is ruptured and the pressure fluid flows through the radial ports of the cap member to the manifold.

3,797,857

TRIM STRIPS FOR VEHICLE DOOR OPENINGS

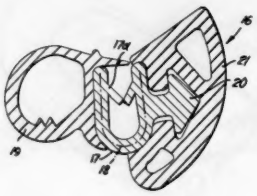
John Vincent Reeves, Coventry, England, assignor to Chrysler United Kingdom Limited, London, England

Filed June 16, 1972, Ser. No. 263,445

Claims priority, application Great Britain, July 13, 1971, 32833/71

Int. Cl. B60r 13/02

U.S. Cl. 280—150 B 6 Claims



A trim strip for a vehicle door opening has a U-shaped channel to fit around a flange around a door opening. The channel has, on one side, a resilient sealing member to engage a vehicle door and, on the opposite side, an elongate resilient pad secured along the channel by a snap-on fastener to protect a vehicle occupant from injury on the flange.

3,797,858

FRONT SEAT BACK PROVIDING PROTECTION TO OCCUPANTS OF REAR SEATS OF A MOTOR VEHICLE

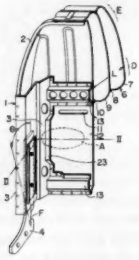
Makoto Yamada, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed July 17, 1972, Ser. No. 272,157

Claims priority, application Japan, Oct. 20, 1971, 46-83119

Int. Cl. B60r 21/02

U.S. Cl. 280—150 B 4 Claims



A front seat back providing protection to occupants of rear seats of a motor vehicle.

The front seat back comprises a skeleton of the front seat back, a main panel member covering the entire rear surface of the skeleton, reinforcing members disposed at marginal portions of the main panel member, arms for connecting the reinforcing members to the vehicle body, the main panel member and the arms being constructed such that they undergo plastic deformation when a force of impact higher than a predetermined level for each of them is exerted thereon, a horizontal slit formed substantially in the middle of the main panel member, and a buffer element made of a material which permits the buffer element to undergo plastic deformation when a force of impact higher than a predetermined level therefor is exerted thereon and superposed on the main panel member to project rearwardly and to be disposed above the horizontal slit.

3,797,859

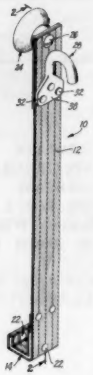
CARGO TIE-DOWN ATTACHMENT BRACKET

Richard A. Vasquez, 1905 S. Walnut St., San Gabriel, Calif.

Filed Nov. 19, 1971, Ser. No. 200,402

Int. Cl. B60p 7/00

U.S. Cl. 280—179 R 3 Claims



A readily adjustable and removable cargo tie-down attachment bracket to be secured to a vehicle such as one side wall of the cargo space of a pick-up truck for securing an end of a cargo tie-down cord or the like. The bracket has a tension member such as a strap with anchor means such as a hook on one end for engaging a shoulder on the vehicle to releasably secure the strap end to the vehicle, hold-down means such as a suction cup on the other strap end for releasably holding the latter strap end against the vehicle, and a tie-down attachment member such as a hook on the strap to which the tie-down may be secured. The bracket may be readily moved from one location to another on the vehicle and removed from the vehicle when not in use.

3,797,860

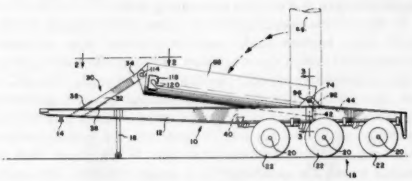
MOBILE CARRIER FOR A RADIOACTIVE MATERIAL SHIPPING CONTAINER

Reuben W. Peterson, Brookmeade, Del., and Harold A. Backus, Wynwood, Pa., assignors to NL Industries, Inc., New York, N.Y.

Filed May 24, 1971, Ser. No. 146,245

Int. Cl. B60p 7/00

U.S. Cl. 280—179 R 6 Claims



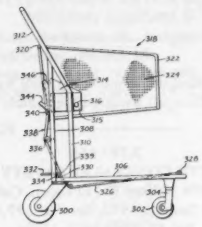
The mobile carrier includes a supporting framework having spaced support means connected to the framework for supporting opposite ends of the shipping container. The portions of the framework between said support means are placed in tension while the shipping container is placed in compression thereby substantially reducing the required weight and size of the supporting frame members.

3,797,861

CHECK OUT SYSTEM AND CART THEREFOR

Willie M. Shoffner, 318 S. Lutheran Church Rd., New Lebanon, Ohio

Division of Ser. No. 62,889, Aug. 11, 1970, Pat. No. 3,700,074.
This application Dec. 6, 1971, Ser. No. 204,929
Int. Cl. B62b 3/08
U.S. Cl. 280—33.99 H 5 Claims



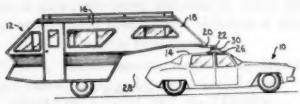
A merchandise check out system and a special cart in which the customer has collected the merchandise is presented to a check out station so that a check out clerk in the station can pick up the articles of merchandise from the cart directly, while a second cart in end to end relation with the first cart has bags therein into which the merchandise can be placed directly by the check out clerk, thereby eliminating the counters and conveyors. The basket of the cart is open at the front and is tiltable upwardly at the front end to selected angles.

3,797,862

PRINTED CIRCUIT BOARD HITCH CONNECTOR

Ernest E. Letterman, Warrensburg, Mo., assignor to Harmon Industries, Inc., Grain Valley, Mo.

Filed Mar. 1, 1972, Ser. No. 230,860
Int. Cl. B60d 1/06
U.S. Cl. 280—422 8 Claims



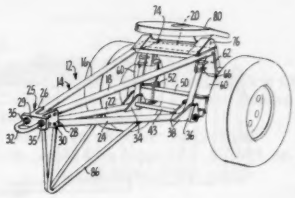
A hitch arrangement for coupling a towing vehicle with the tongue of a towed vehicle and for interconnecting the electrical systems of the two vehicles through means which permits relative rotation of the vehicles about the upright axis established by the hitch connection without interrupting electrical continuity. In applications utilizing a ball and socket hitch where the vehicles are capable of unlimited relative rotation, such as a towing vehicle and trailer combination employing a car-top hitch, the hitch ball is supported on a baseplate attached to the top of the towing vehicle. An electrical contact assembly is mounted beneath the hitch ball and comprises a horizontally disposed printed circuit board having a plurality of circular, radially spaced, conductive lands concentric with said axis, and a plurality of electrically conductive wipers engaging corresponding lands. The circuit board is stationary with the baseplate, and a disc that is rotatable about said axis supports the wipers and is closely spaced from the board. A pair of spaced, upstanding ears on the disc receive the tongue of the towed vehicle, thus the disc and wipers move with the towed vehicle as the vehicles undergo relative rotation about said axis. The electrical systems of the towing and towed vehicles are connected by cables with the lands and the wipers respectively. A weatherproof boot encloses the contact structures and the ears.

3,797,863

LIGHTWEIGHT CONVERTER DOLLY

Joseph J. Cunha, Castro Valley, Calif., assignor to Cunha Products, Inc., Haywood, Calif.

Filed Aug. 11, 1972, Ser. No. 280,047
Int. Cl. B62d 53/00; B60d 1/14
U.S. Cl. 280—476 R 6 Claims



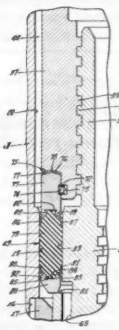
A lightweight converter dolly having uni-body construction of generally triangular profile which serves as both the dolly frame and tongue. An axle is drawn and positioned by trailing arms extending rearwardly from the lower portion of the frame and resilient elastic bodies disposed between the axle and an upper overhanging portion of the frame suspend the frame on the axle. A fifth wheel is mounted on the upper rear portion of the frame for supporting the forward end of a semi-trailer thereon. A hitch is provided at the forward end of the frame by a U-bolt projecting forwardly therefrom. Stand members extend downwardly from the forward portion of the frame for suspension thereof when the dolly is not in use.

3,797,864

COMBINED METAL AND ELASTOMER SEAL

Joseph H. Hynes, Ojai, and Arthur P. Ortolon, Jr., Oxnard, both of Canada, assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Oct. 28, 1971, Ser. No. 193,312
Int. Cl. F16l 21/00
U.S. Cl. 285—140 6 Claims



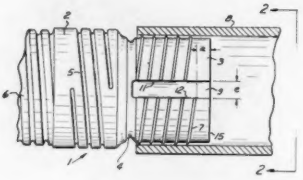
A well casing hanger is provided with a seal deformable into sealing engagement with opposed cylindrical walls of the casing hanger body and another body upon axial compression of the seal. The seal is compound and includes metallic end rings on a cylindrical elastomeric body, the end rings having marginal lips which are deformed oppositely into metal-to-metal sealing engagement with the cylindrical walls and form a seal closing the peripheral gap between the end rings and the cylindrical walls. The elastomeric body is also deformed into sealing engagement with the cylindrical walls and confined by the metallic lips against extruding between the end rings and the cylindrical walls.

3,797,865

ADAPTER

Willard Ballentine, Flint, Mich., assignor to Palmer Concrete Products, Inc., Flint, Mich.

Filed Feb. 25, 1971, Ser. No. 118,726
Int. Cl. F16l *21/00*
U.S. Cl. 285—175 **10 Claims**



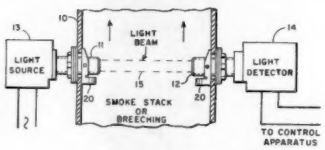
An adapter for connecting a threaded conduit to a smooth-walled conduit. The adapter includes a first body portion having a righthanded screw thread for securement to a threaded conduit. A second body portion having a pair of diametrically opposed concave land sections and a lefthanded acute angled chamfered screw thread is adapted to be inserted within the interior of the smooth-walled conduit. The acute angled chamfered thread hinders axial separation of the adapter from the smooth-walled conduit.

3,797,866

FASTENING DEVICE FOR FASTENING A MEMBER THROUGH A HOLE IN A WALL FROM THE INSIDE SURFACE OF THE WALL

Roman Smulka, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 7, 1972, Ser. No. 260,601
Int. Cl. F16l *5/00*
U.S. Cl. 285—208 **3 Claims**



A fastening device used for fastening a pipe to a wall by inserting the pipe through a hole in the wall so that a pivoted locking device attached to the end of the pipe can change position after the pipe is inserted in the hole and rotated 180°. With such a locking device, the pipe can be removed by reversing the operation to cause the locking device to pivot back to an unlocked position so the pipe can be pulled back out of the hole in the wall.

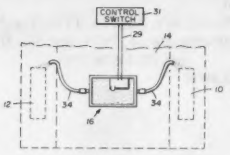
3,797,867

PNEUMATIC VEHICLE SANDING APPARATUS

John J. Hartl, 2200 Second St., S.W., Cedar Rapids, Iowa

Filed June 7, 1972, Ser. No. 260,659
Int. Cl. B60b *39/08, 39/10;* **B61c** *15/10*
U.S. Cl. 291—3 **5 Claims**

A semi-automatic pneumatic sanding apparatus for use in vehicles to spread sand on slippery road surfaces and thereby increase vehicle traction. The operation of the sander is controlled by the vehicle driver from the driver's compartment. The sander includes a fan to create an air stream which is used as the conveying medium to move the sand from a storage bin onto the road surface just ahead of the vehicle drive wheels.

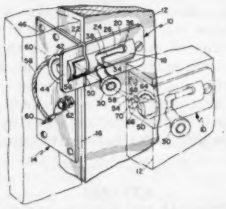


3,797,868

BOLT WITH CONCEALED SAFETY CABLE

John R. Carey, 1996 Milford Pl., El Cajon, Calif.

Filed Oct. 16, 1972, Ser. No. 297,603
Int. Cl. E05c *5/02, 17/04*
U.S. Cl. 292—57 **9 Claims**



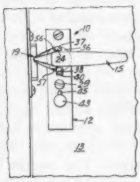
A door securing bolt movable by a single knob to open, locked and safety positions. In the safety position the bolt is engaged with a cable concealed in the door jamb, the cable allowing limited opening of the door and retracting automatically when the door is closed. In one form the safety cable is incorporated in a slide bolt with an added rotary action for engaging the cable. In another form the cable is attached to a knob which is movable along a slot to the three specific positions.

3,797,869

DOOR LATCH

John M. Shaw, Minneapolis, Minn., assignor to Hartzell Manufacturing, Inc., St. Paul, Minn.

Filed Nov. 24, 1972, Ser. No. 309,217
Int. Cl. E05c *3/22*
U.S. Cl. 292—207 **3 Claims**



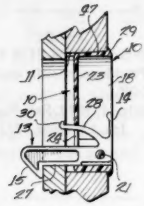
A door latch in which a latch bolt is mounted on the interior door handle for rotation with the handle and for pivotal movement relative thereto, the latch bolt being resiliently urged to a strike engaging position. A locking slide is supported for movement perpendicular to the axis of rotation of the handle and it is formed with a locking and camming tongue extending

parallel to the axis of the handle for insertion into an axial slot in the handle to lock the handle against rotation. The latch bolt is formed with a camming surface adjacent the handle to cam the locking and camming tongue out of the slot in the handle upon pivotal movement of the latch bolt against the resilient urging.

3,797,870
FLUSH MOUNTED HANDLE, LATCH BOLT, LOCK AND HOUSING ASSEMBLY

Melvin H. Beckman, Rockford, Ill., assignor to Keystone Consolidated Industries Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 209,098, Dec. 17, 1971, abandoned. This application Apr. 21, 1972, Ser. No. 246,432
Int. Cl. E05c *13/04*
U.S. Cl. 292—128 **22 Claims**

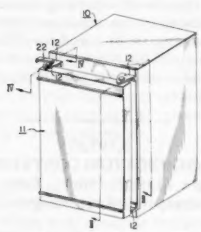


A novel flush mounted handle, latch bolt and housing assembly formed of a suitable plastic material such as nylon and comprising a housing conformably received and frictionally retained in an opening in a door, drawer or other closure such as intended for recreational vehicles or the like, and a combined handle and latch bolt, these two components being readily assembled when snapped together and provide a positive and secure assembly. The novel latch bolt has a flexible tab coacting with the housing to provide spring pressure to bias the latch bolt to latching position, and a key-operated locking means in the housing for retaining the latch bolt in locked position.

3,797,871
DOOR HOLDER

Masao Morishita, Kani, Japan, assignor to Howa Sangyo Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed Feb. 1, 1972, Ser. No. 222,491
Claims priority, application Japan, July 28, 1971, 46-67579
Int. Cl. E05c *3/04*
U.S. Cl. 292—209 **7 Claims**

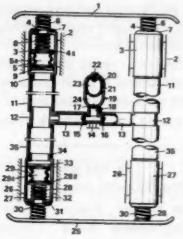


For holding the door of a cabinet or the like in a closed position, a bracket is secured to the cabinet adjacent to the openable end of the door. An L-shaped door retaining member is horizontally swingably mounted on the bracket through a stationary piece which has a concavity to receive a corresponding convexity formed on the door retaining member when the latter is in its door holding position. The retaining member is made of resilient material to yield to an excessive load exerted thereto when the door is forced open. The bracket may be one of four similar brackets respectively secured at the corners of the open end of the cabinet with two of the other three brackets pivotally supporting the door therebetween, so that the door is easily modifiable to open at the opposite end thereof.

3,797,872
BUMPER FOR VEHICLES

Tadakiyo Watanabe; Hiromu Konishi, and Ken-ichi Chiku, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 20, 1971, Ser. No. 209,699
Claims priority, application Japan, Mar. 8, 1971, 46-12345
Int. Cl. B60r *19/06*
U.S. Cl. 293—30 **5 Claims**

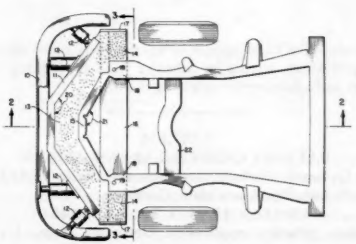


A bumper device for automobiles and other vehicles comprising at least one pair of bumper plates provided symmetrically on the front and rear sides or right and left sides of a vehicle body, and at least one pair of piston cylinder mechanisms mounted on front and rear sides or right and left sides of the vehicle body for supporting one pair of bumper plates. The device further comprises at least one pair of connection lines for inter-connecting the corresponding piston cylinder mechanisms and filled with fluid, and at least one pair of pressure reducing valves each mounted between one of the pair of piston cylinder mechanisms and one of the pair of connection lines.

3,797,873
ENERGY ABSORBING APPARATUS

Charles A. Cook, Jacksonville, Tex., assignor to Ethyl Corporation, Richmond, Va.

Filed June 28, 1971, Ser. No. 157,114
Int. Cl. B60r *19/04*
U.S. Cl. 293—63 **13 Claims**



An energy absorbing apparatus for a vehicle including a frame connected to the front end of an automobile chassis. The frame is connected to the vehicle bumper by compressible energy absorbing means.

3,797,874

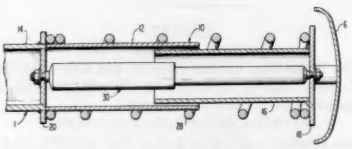
VEHICLE BUMPER IMPACT ABSORBING SYSTEM

John J. Tufano, 102 Stewart St., New Britain, Conn.

Filed July 12, 1972, Ser. No. 271,155

Int. Cl. B60r *19/06*

U.S. Cl. 293—86 **4 Claims**



A vehicle bumper impact assembly includes a guide cylinder carried by the vehicle frame, and an impact cylinder slidable within the guide cylinder and securable to the bumper at its outer end. A coil compression spring and a fluid type shock absorber unit are disposed between the guide cylinder and the impact cylinder to resist inward movement of the impact cylinder. An abutment is positioned on the frame to limit inward travel of the impact cylinder and to provide means for mounting the coil spring and the shock absorber unit.

3,797,875

DEVICE FOR HANDLING SMALL OBJECTS

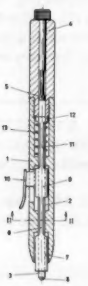
Herbert Emile den Hamer, Hague, Netherlands, assignor to Nederlandse Organisatie Voor Toegespart-Natuurweter-Schappelijk Onderzoek Ten Behoeve Van Nijverheider Handel En Verkeer, The Hague, Netherlands

Filed Nov. 2, 1971, Ser. No. 194,841

Claims priority, application Netherlands, Nov. 11, 1970, 7016527

Int. Cl. A47f *13/00*; **B65h** *3/20*

U.S. Cl. 294—1 R **2 Claims**



A pencil-like hand-apparatus for handling small objects of divergent kinds, having an adhesive head for picking up the objects and a stripper for releasing them.

3,797,876

BATTERY CARRYING ARRANGEMENT

Klaus Gummelt, Garbsen, Germany, assignor to Varta Aktiengesellschaft, Frankfurt/Main, Germany

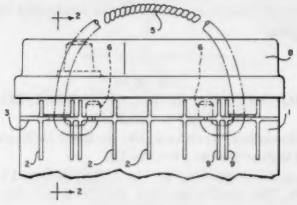
Filed Sept. 12, 1972, Ser. No. 288,453

Claims priority, application Germany, Sept. 17, 1971, 7135447

Int. Cl. H01m *1/04*

U.S. Cl. 294—63 B **10 Claims**

A plastic carrying handle for batteries has enlarged ends attached to a rib-supported ledge protruding from the side of the battery case. The part of the handle near each end loops below the ledge and passes upwardly through a slot in the ledge so that its respective enlarged end is supported on the top of the ledge.



3,797,877

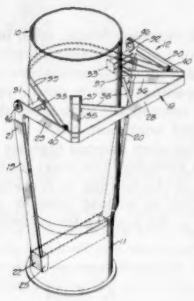
LIFTING SADDLE FOR VESSELS

John E. Soehrens, Pasadena, Calif., assignor to C F Braun & Co., Alhambra, Calif.

Filed July 11, 1972, Ser. No. 270,590

Int. Cl. B66c *1/22*

U.S. Cl. 294—67 B **4 Claims**



A lifting saddle for moving a heavy object such as a pressure vessel from horizontal position to vertical position includes a yoke which encircles a portion of the girth of the object. Cables attached to the yoke encircle another portion of the girth of the object to secure the object and yoke together. Tension elements extend longitudinally from the yoke to apply lifting forces to the vessel at a location remote from the yoke. The tension elements may comprise metallic straps secured to opposite ends of a crossbeam extending diametrically through a portion of the vessel, or the tension elements may comprise flexible cables passing under a portion of the vessel. Contact between the yoke and the outer surface of the vessel may be provided by radial posts on the yoke or by an arcuate contact member on the yoke.

3,797,878

DROP BOTTOM CONTAINER

Raymond C. Fagre, 4125 W. 45th St., Edina, Minn., and Elvin E. Kaiser, Minneapolis, Minn., assignors to said Fagre, by said Kaiser

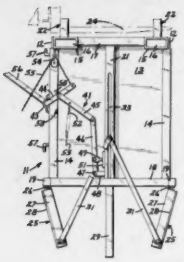
Filed Sept. 1, 1972, Ser. No. 285,806

Int. Cl. B66c *3/00*

U.S. Cl. 294—71 **21 Claims**

A drop bottom container adapted for use with a fork lift. The container has a pair of hinged door members for closing its open bottom which are latched into closed position and swing by gravity to the open position when the latch is released. The door members are yieldingly limited at the open

position to prevent uncontrolled swinging movement. The latching mechanism is released manually, initially with minimum movement and maximum mechanical advantage to overcome load forces, followed by progressively increased movement to quickly effect the release even with the con-



tainer in a fully loaded condition. Means are also included for closing the doors as the container is lowered, which includes a vertically disposed longitudinal member projecting below the open doors which engages the ground with such lowering movement.

3,797,879

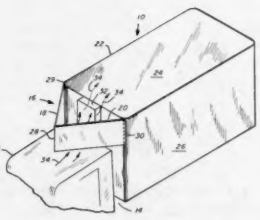
CAB OR VAN VEHICLE AIR DEFLECTOR

John D. Edwards, 1033 N. Florence, Tulsa, Okla.

Filed Nov. 10, 1972, Ser. No. 305,233

Int. Cl. B62d *35/00*

U.S. Cl. 296—1 S **7 Claims**



This invention describes a demountable type of air deflector device in the form of a triangular prism which can be attached to the upper front wall of a large van or semitrailer, and which extends over the top of the cab. The triangular shaped structure can have a closed top and bottom or, if desired, apparatus such as a refrigerating unit may be placed on the front wall of the van and air allowed to pass up through the air deflector past the refrigerating unit and up over the top of the van. Shock mounts may be provided for attaching the structure to the van, and means are provided for rapidly removing the deflector device as occasion demands.

3,797,880

EXTENDABLE VEHICLE BODY

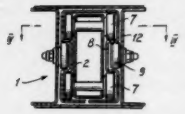
Paolo Pezzaglia, Milan, Italy, assignor to Carrozzeria boneschi Srl, Milan, Italy

Filed June 1, 1972, Ser. No. 263,365

Int. Cl. B62d *33/08*

U.S. Cl. 206—26 **2 Claims**

A guide for the movement of the walls of vehicle bodies of the extendable wall type comprising at least a first and a second beam member constituted of sections, and supporting the first member a plurality of wheels mounted on ball bearings, adapted to engage with rolling tracks defined inside the second member, so as to permit the sliding engagement of



the first member in the second member, the first member being connected to the extendable walls whereas the second member is fixed to a vehicle chassis.

3,797,881

BUS

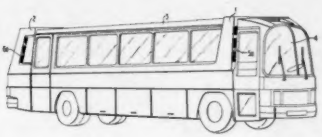
Robert Bermanseder, and Norbert Bermanseer, both of Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft

Filed Feb. 11, 1971, Ser. No. 114,420

Claims priority, application Germany, Feb. 12, 1970, 2006250

Int. Cl. B62d *31/04*

U.S. Cl. 296—28 A **12 Claims**



A bus whose top structure includes a forward and rearward roll-over girder constructed as hollow bearers which are supported at the lower ends on the frame structure of the vehicle in order to increase the rigidity of the top, particularly against compression in case of rolling over during an accident.

3,797,882

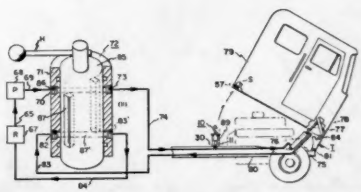
HYDRAULIC SYSTEM AND MECHANICAL LATCH THEREFOR

Ray S. Brimhall, Salt Lake City, Utah, assignor to Walker Bank and Trust Company

Filed Apr. 29, 1968, Ser. No. 732,484

Int. Cl. B62d *33/06*

U.S. Cl. 296—28 C **13 Claims**



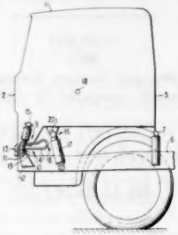
The present invention comprises a pressure system and latching means for determining and controlling movement of a truck-cab relative to its tractor, and, in addition, for latching the two structures together, for translational movement. The pressure system includes means not only for unlocking the latch employed but also for controlling movement and disposition of a cab relative to its tractor frame. The latch means, itself, is of importance in a variety of contexts, to provide for control at a distance of unlatching and latching together two given structures.

3,797,883

SPRING AND TILTING ARRANGEMENT FOR TILTABLE DRIVER CABS

Adolf Steiner, Fritz-Von-Graevenitz, and Hans Rinnergschwentner, both of Rotenfels, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Division of Ser. No. 9,178, Feb. 6, 1970, Pat. No. 3,649,066.
This application Dec. 15, 1971, Ser. No. 208,379
Claims priority, application Germany, Feb. 8, 1969, 1906337
Int. Cl. B62d 27/04, 27/06
U.S. Cl. 296—35 R 14 Claims



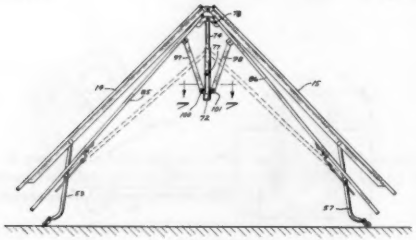
A spring and tilting system for tiltable driver cabs in which springs preferably extending in the vehicle longitudinal direction are provided between the front edge of the driver cab and the vehicle frame while a mounting support of the driver cab equalizing any twisting of the vehicle frame is provided at or near the rear edge of the driver cab. The springs may be constructed as hairpin-shaped, flat springs whose upper leg portion is connected with the driver cab. A lost motion connection is provided between the tilting piston-cylinder mechanism and the driver cab and vehicle frame for permitting free spring action during the normal drive of the vehicle.

3,797,884

FOLDABLE TABLE AND SEATING STRUCTURE

Julian Gutierrez, 6233 Brookview Ave., Minneapolis, Minn.

Filed Feb. 17, 1972, Ser. No. 227,135
Int. Cl. A47b 3/14
U.S. Cl. 297—159 2 Claims



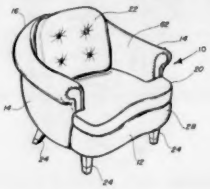
A foldable table adapted to fold upwardly centrally thereof having as an improvement in connection therewith an attachable seating structure to provide seats co-extensive with said table at each side thereof, sand seating structure being foldable unitarily with said table and corresponding to the thickness thereof, being detachably secured thereto and being adjustable as to height compatible with the height of said table and being adjustable as to height independently of said table.

3,797,885

SEAT TYPE ARTICLE OF FURNITURE AND METHOD OF MANUFACTURING

Edward W. Harman, Maiden, and Marvin R. Leatherman, Newton, both of N.C., assignors to Prestige Furniture Corporation, Newton, N.C.

Filed June 28, 1972, Ser. No. 267,422
Int. Cl. A47c 7/54, 7/00
U.S. Cl. 297—445 8 Claims



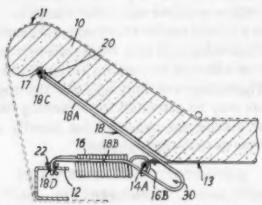
A chair having a base and a shell, with the base providing the seat bottom and the shell providing the sides and back of the seat. The base has a flat top portion that forms the seat bottom and has a continuous outer rigid rim that seats in a continuous downwardly and inwardly facing recess in a rigid bottom rim of the shell, with the sides of the base top portion being completely contained within the shell rim recess so that no upholstering or finishing of the base top portion sides is necessary. The chair is manufactured by separately forming the base and shell, the latter preferably being molded of plastic, and separately upholstering the shell with edges of the upholstery covering layer conveniently secured in the aforementioned recess and securing a seating structure in the base with a covering layer that has edges secured to the rim; the base and shell are then assembled by seating the base rim in the shell recess with the upholstery covering layer edges and seating structure covering layer edges desirably disposed out of sight in the shell recess, and with the shell completely encompassing the base rim for firm securement of the shell on the base.

3,797,886

SEAT FRAMES

David Thomas Griffiths, Ammanford, Camarthenshire, Wales, assignor to Youngflex S.A., London, England

Filed Aug. 1, 1972, Ser. No. 277,100
Int. Cl. B60n 1/06; A47c 7/02
U.S. Cl. 297—452 10 Claims



A seat frame, particularly for an automobile, comprises a base frame; a pad which comprises a series of parallel cords and a series of parallel cross-wires, and is suspended across the base frame by means of two rows of tension spring members extending from opposite sides of the base frame for connection with the corresponding side edges of the pad; and an edge frame mounted above the base frame on jack spring members which extend upwardly and outwardly from the side edge re-

gions of the pad and are secured at their upper ends to said edge frame. The jack spring members may constitute the upper limbs of jack springs which are anchored at their lower ends on said base frame, or may constitute the upper limbs of jack springs having short horizontal lower limbs which interconnect said rows of tension spring members and the corresponding side edges of the pad. The pad is usually central, and supplementary pads may be arranged wt the sides of the central pad to provide insulation from the individual jack spring members.

3,797,887

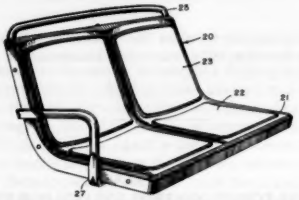
SEAT FOR URBAN MASS TRANSIT VEHICLES

Chester J. Barecki, and Alexander A. Karrip, both of Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.

Division of Ser. No. 157,345, June 28, 1972, Pat. No. 3,737,198. This application Aug. 15, 1972, Ser. No. 280,793

Int. Cl. B60n *1/06*; **A47c** *3/00*

U.S. Cl. 297—454 **7 Claims**



A two-passenger seat for urban mass transit vehicles includes a tubular frame attached to an upright wall of the vehicle and a one-piece plastic shell body-contoured to accommodate two passengers side-by-side. The individual passenger sections each define a back recess for receiving a bucket-contoured back insert, and a seat recess for receiving a contoured seat insert. The body contour in the shell is extended beyond the inserts to provide a rigid upwardly contoured periphery about each section for securing each passenger in place during sharp turns.

3,797,888

CUTTER DRIVE MOTOR SUPPORT ON ARM PIVOT

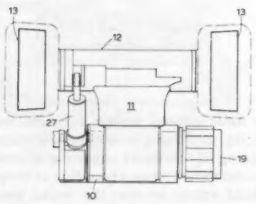
Herbert Haller, Gelsenkirchen-Buer, and Werner Mennekes, Weidenkamp, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Dec. 6, 1972, Ser. No. 312,527

Claims priority, application Germany, Dec. 7, 1971, 2160644

Int. Cl. E21c *27/24*

U.S. Cl. 299—76 **9 Claims**



A cutting apparatus primarily for use in mining work and having an arm pivotably supported in a base housing for swinging upwardly and downwardly. The arm has cutting devices supported for rotation on a shaft at its free end and this shaft is coupled with a chain disposed within the arm to a further shaft at the lower end of the arm. The further shaft is connected to the output shaft of a drive motor and the axes of the shafts are aligned with the axis of pivoting of the arm. The drive motor has its own housing supported on an outer ring. This outer ring is in turn mounted for rotation on an inner ring accommodated in a side wall of the base housing. This inner ring is, in turn, connected to the arm. A projection of the housing of the motor engages a stop member to prevent rotation of the housing itself relative to the base housing and apart from this there is no contact between the motor and the base housing.

3,797,889

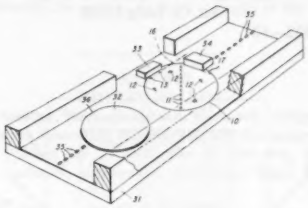
WORKPIECE ALIGNMENT SYSTEM

Thomas Frank Wilkinson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,123

Int. Cl. B65g *53/00*

U.S. Cl. 302—2 R **9 Claims**



A workpiece alignment system is particularly useful in the alignment of circular or cylindrical workpieces. The workpieces are provided with a flat edge along the circumference which flat edge is aligned in a preselected direction, thereby aligning the workpiece. The system is comprised of a body which includes apertures through which directional air jets flow carrying the workpiece on a directional air cushion to position the workpiece on the body; rotational air jet apertures for rotating the positioned workpiece until the flat edge is in the preselected direction; and flat sensing vacuum apertures for stopping the rotation of the workpiece when the flat edge is in the preselected direction and for providing a signal indicative of the alignment of the workpiece for the system.

3,797,890

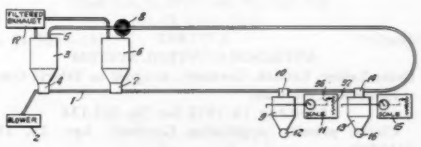
PNEUMATIC SCALING SYSTEM

Armon J. Walters, 39 Haverhill Rd., Trumbull, Conn.

Filed Oct. 16, 1972, Ser. No. 297,931

Int. Cl. B65g *53/40*, *53/66*

U.S. Cl. 302—3 **10 Claims**



A pneumatic materials handling and scaling system comprising a materials supply container, a materials receptor scale container and a pneumatic conveyor tube associated with both containers for conveying material from the supply container to the receptor container at uniform speed and for conveying excess material back to the supply container, characterized by the supply container being provided with adjustable

feeder means for introducing the material from the supply container into the pneumatic tube at adjustable rates and the pneumatic tubing being provided with valve means operative between a diverted position in which it diverts substantially the complete flow of material from the pneumatic tube into the receptor container and a through position in which it permits substantially the complete flow of material through the pneumatic tube bypassing the receptor container and preferably a dribble position in which it partially diverts the flow of material from the pneumatic tube into the receptor container while the feeder means is operating at a reduced speed.

3,797,891

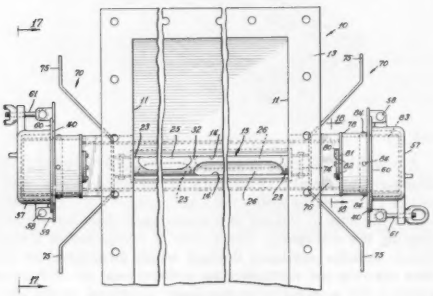
PNEUMATIC HOPPER DISCHARGE OUTLET

William E. Fritz, Hinsdale, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Aug. 28, 1972, Ser. No. 284,254

Int. Cl. B65g *53/40*

U.S. Cl. 302—52 **4 Claims**



Between the lower longitudinal sharp edges of inclined hopper side walls is a pivotable valve shaft having cavities for alignment with the edges to control discharge of lading into an underlying trough which terminates in cylindrical outlet tubes for pneumatic removal of the lading. The cavities have various lengths and are positioned at different circumferential positions to achieve different unloading characteristics. The trough and the outlet tubes may have about the same cross sectional area.

3,797,892

ANTILOCK CONTROL SYSTEM

Heinz Leiber, Leimen, Germany, assignor to Teldrix GmbH, Heidelberg, Germany

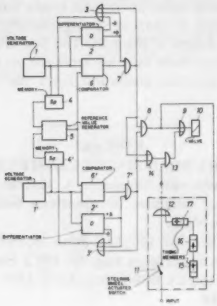
Filed Apr. 18, 1972, Ser. No. 245,134

Claims priority, application Germany, Apr. 22, 1971, 2119590

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 EB **9 Claims**

An antilock control system for controlling the braking pressure acting on the wheels of one vehicle axle comprises a sensing device for sensing the behavior of each wheel, two control arrangements for controlling the braking pressure, the first of which is actuated when both wheels exhibit a tendency to lock and the second of which is actuated when one of the wheels exhibits a tendency to lock and a switch device for switching from the first control arrangement to the second



control arrangement when the vehicle is subjected to or is about to be subjected to transverse accelerations.

3,797,893

BRAKE FORCE CONTROL SYSTEM FOR VEHICLES

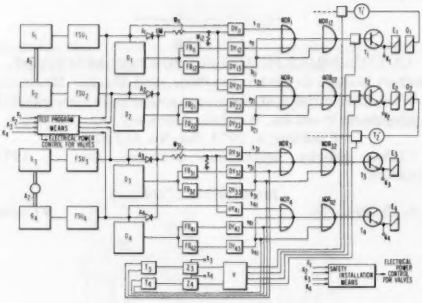
Manfred H. Burckhardt, Waiblingen, and Hellmut Krohn, Esslingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed July 6, 1972, Ser. No. 269,433

Claims priority, application Germany, July 6, 1971, 2133547

Int. Cl. B60t *8/08, 8/12*

U.S. Cl. 303—21 BE **44 Claims**



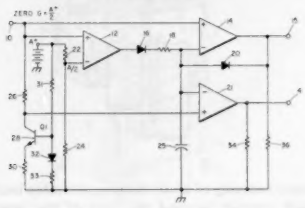
A brake force control system for vehicles, especially for motor vehicles, in which a sensor is coordinated to each wheel for determining its rotational condition, whose signals actuate inlet and outlet valves when exceeding or dropping below certain threshold values so that the brake pressure either increases, remains constant, or decreases, whereby, particularly in vehicles with a high center of gravity and especially with a short wheel base, an additional logic circuit connection is provided which decreases the pressure at the front wheel brakes if a signal symbolizing the road traction of the rear wheels does not arrive within a certain delay.

3,797,894

COMBINATION PEAK DETECTOR AND LEVEL DETECTOR FOR USE IN AN ADAPTIVE BRAKING SYSTEM

Ralph W. Carp, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 24, 1973, Ser. No. 326,209
Int. Cl. B60t *8/00*; 303 *20/21*
U.S. Cl. 303—21 R 11 Claims



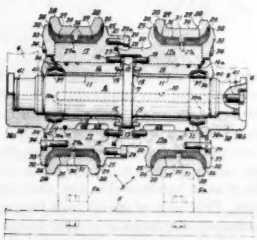
A peak detector for use in an adaptive braking system includes a current source which supplies current to a memory capacitor to maintain the voltage thereacross equal to an input signal so long as the input signal remains above a first threshold. While the input signal is decreasing below the first threshold, current is drawn from the memory capacitor so that the voltage thereacross continues to track the input voltage. However, when the input signal subsequently begins to increase below the first threshold, diodes prevent current from entering or being drawn from the memory capacitor so that the voltage across the capacitor remains constant and equal to the negative peak value of the input signal. The voltage across the capacitor is applied as one input to a comparator while only a portion of the input signal voltage is applied as the second input to the comparator. Accordingly, when the input signal voltage increases by an amount related to the above mentioned portion the comparator generates an output.

3,797,895

LOWER TRACK ROLLER FOR CRAWLER TRACK

Kazuhiro Tomizawa, Chiba, Japan, assignor to Nittai Lease Company Ltd., Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 228,040
Claims priority, application Japan, Feb. 24, 1971, 46-9163
Int. Cl. B62d *55/16*
U.S. Cl. 305—27 6 Claims



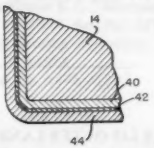
A lower track roller having a resilient buffer means positioned between the roller body and the tread ring.

3,797,896

BEARING FOR WEAR DETECTION

Herbert Bardach, Danbury, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 21, 1971, Ser. No. 136,083
Int. Cl. F16c *33/00*
U.S. Cl. 308—1 A 8 Claims



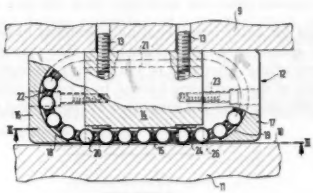
A bearing lined with silver, there being radioactive atom dopants of two species, neither of which need be silver, at a particular depth of the silver lining and a method of placing these radioactive atom dopants in said bearing by electrodeposition without altering the quality or bond strength of the silver lining.

3,797,897

ROLLER BEARING

Georg Schaeffler, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler, Herzogenaurach, Germany

Filed Dec. 29, 1972, Ser. No. 319,496
Claims priority, application Germany, Jan. 18, 1972, 2202085
Int. Cl. F16c *29/06*
U.S. Cl. 308—6 C 4 Claims



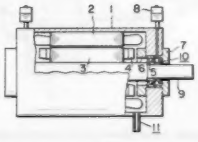
Novel roller bearing for the longitudinally moveable mounting of parts wherein rollers of the bearing move into and out of a slot or space between two races arranged parallel to each other.

3,797,898

SHAFT BEARING-AND-SEALING DEVICE

Morishima Juichi, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Nov. 6, 1972, Ser. No. 303,716
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 7 Claims



A shaft bearing-and-sealing device of simple construction for the rotary machines such as an electric motor and the like

which assures reliable and positive oil sealing function, having a suction fan installed in an axially inner position further inward than the bearing for applying suction to the lubricating oil so as to prevent the oil from leaking out from around the shaft bearing members. This device is readily applicable to and combined with the conventional shaft bearing construction incorporating an oil lubricating an oil lubricating system simply by providing a disc on the output shaft with a larger outer diameter than that of the inner race of the bearing for the purpose of preventing oil leakage cooperatively with the suction fan.

3,797,899

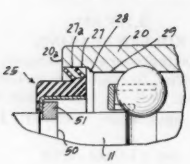
MULTIPLE LIP OUTER LAND RIDING SEAL

Lawrence G. Anderson, Greenhurst, N.Y., assignor to TRW, Inc., Cleveland, Ohio

Filed Sept. 27, 1971, Ser. No. 183,950

Int. Cl. F16c *33/78*

U.S. Cl. 308—187.1 **3 Claims**



A seal for anti-friction bearing assemblies having a pair of axially spaced apart lips adapted to ride against the inner diameter of the outer race of the bearing assembly, the inner diameter of the seal being backed by a rigid backing ring and being affixable to a shaft supported by the bearing assembly.

3,797,900

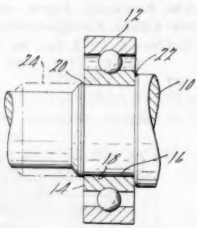
BEARING ASSEMBLY

Anthony J. Secola, Hartford, Wis., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 16, 1972, Ser. No. 281,253

Int. Cl. F16c *36/06*

U.S. Cl. 308—236 **10 Claims**



An arrangement providing positive retention of a bearing on a shaft; the bearing is forced over a specially sized shoulder on the shaft by momentary deformation to a seat and is positively held there.

3,797,901

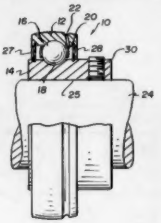
SHAFT LOCKING DEVICE FOR A BEARING ASSEMBLY

Richard J. Smith, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Mar. 14, 1973, Ser. No. 341,092

Int. Cl. F16c *35/06*

U.S. Cl. 308—236 **6 Claims**



The inner racering of a ball bearing assembly includes a portion which extends beyond the face of the bearing axially about a shaft extending through the racering bore. Two holes are drilled in the inner race extension and are spaced apart about the shaft by an angle measured in a radial direction from the shaft axes which subtends an arc of substantially between 30° to 60°. Set screws are threaded through the apertures and meet the shaft in an interference fit thereby locking the inner racering to the shaft.

3,797,902

DISPENSER FOR WEB-FORM HANDTOWEL

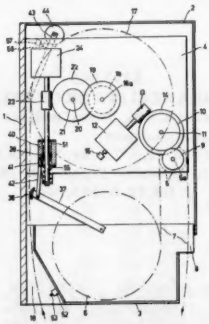
Conrad W. Schnyder, Triesenberg, Liechtenstein, assignor to Neuco Apparatebau AG, Zug, Switzerland

Filed Jan. 29, 1973, Ser. No. 327,485

Claims priority, application Switzerland, Jan. 28, 1972, 1310/72

Int. Cl. B65h *19/00*

U.S. Cl. 312—39 **24 Claims**

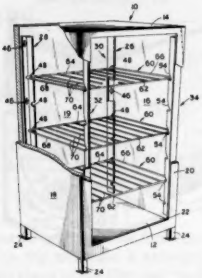


A dispenser for web-form handtowel is disclosed having a casing over which in the rest condition the handtowel is always tensioned between an exit slot and an entry slot. Electric motor driven means are provided for driving a delivery roller so that this withdraws a predetermined length of handtowel from a supply and dispenses it. At the same time, a predetermined length of used handtowel is also unwound from a used handtowel roll. The loop of handtowel formed by the fresh and used handtowel lengths so dispensed hangs out of the casing during a predetermined time after which the motor driven means automatically operate to wind the handtowel up on the used handtowel roll until it is again tensioned over the casing (or until, eventually, the entire end section of the handtowel is wound up).

3,797,903
REFRIGERATOR INCLUDING SHELF MOUNTING APPARATUS

Harry Traulsen, Beechhurst, N.Y., assignor to Traulsen & Co. Inc., College Point, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,841
Int. Cl. A47f 3/04
U.S. Cl. 312—116 14 Claims

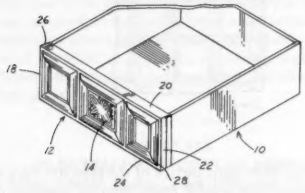


The apparatus includes a pair of front standards and mounting means for mounting a respective one of the pair of front standards adjacent a different edge of the opening of the refrigerator. A pair of rear standards are provided with mounting means for mounting the pair of rear standards on the rear wall of the refrigerator whereby each one of the rear standards is in facing relationship to a different one of the front standards. The pair of front standards are provided with a plurality of vertically spaced rearwardly facing notches each one of which includes an upstanding lip to prevent rearward removal of the front rail of a shelf received therein. The pair of rear standards are provided with a plurality of forwardly facing slots. Each one of the slots extends rearwardly a sufficient distance to permit a shelf received therein to be spaced from the pair of front standards and each one of the slots extends forwardly a sufficient distance to retain and support a shelf when the front rail of the shelf is received in corresponding notches in the front pair of standards.

3,797,904
PLASTIC FACING ELEMENT

Glen W. Krauth, Swainsboro, Calif., assignor to Allied Polymer Corporation, Swainsboro, Ga.

Filed Nov. 15, 1971, Ser. No. 198,765
Int. Cl. B44f 11/00
U.S. Cl. 312—214 3 Claims

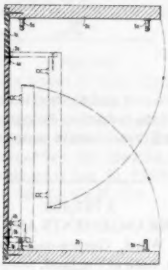


A plastic facing element which may be used on drawers, cabinet doors or the like and will serve to give the drawers, etc. the appearance of having carved wooden fronts. The facing element has a polygonal outline which is the same shape as the outline of the drawer or whatever. A flange projects rearwardly from the element and is designed to fit over the wooden or composition front of the door or drawer and will be nailed, screwed, etc. to firmly attach it to the same. The flange tapers from its thickest at the front of the drawer to its narrowest at its rearmost extension.

3,797,905
FURNITURE OR CONTAINER UNIT

Christoph Naske, Froschhausen, Germany, assignor to WHB-Anbaumobel von Poschinger K.G., Murnau, Germany

Filed Mar. 29, 1972, Ser. No. 239,044
Claims priority, application Germany, Apr. 8, 1971, 2117368; July 9, 1971, 2134373
Int. Cl. A47b 43/00
U.S. Cl. 312—262 1 Claim

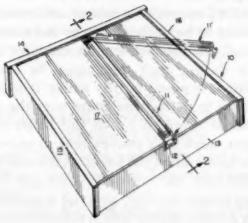


A prefabricated furniture or container unit which comprises a main wall and side walls which are pivotably secured to the main wall by hinges consisting of a flexible sheet material which is secured by an adhesive to the main wall and the side walls so that from an erected boxlike position of the unit in which the side walls may be locked, the side walls may all be pivoted toward the main wall so as to extend substantially parallel thereto so that the entire unit will then take up very little storage or shipping space.

3,797,906
DRAWER SLIDE HAVING NOVEL FRONT PANEL CONNECTION

Kenneth H. Gutner, 3285 Doto, Highland Park, Ill.

Filed Mar. 9, 1973, Ser. No. 339,574
Int. Cl. F16c 29/00
U.S. Cl. 312—330 3 Claims



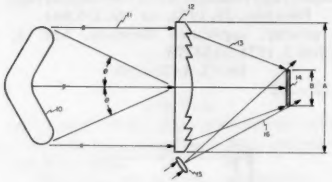
A channel shaped slide for the underside of a drawer having a fluted angled internal tab at its front end for securing the slide to a drawer having a hollow front panel.

3,797,907

FRESNEL LENS SCATTER PLATE FOR DATA REDUCTION HOLOGRAPHY

Emmett N. Leith, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 18, 1972, Ser. No. 290,042
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **2 Claims**



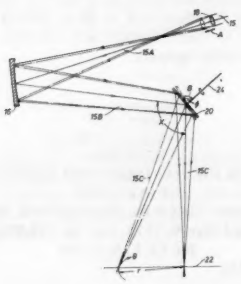
Holographic apparatus and method utilizes a Fresnel lens as a scatter plate in data reduction holography. A second embodiment utilizes a Fresnel lens in series with a fly's eye lens array.

3,797,908

OPTICAL ARRANGEMENTS AND APPARATUS

Brooke Armitage Ward, Goring-on-Thames, and David A Reynolds, Didcot, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 121,921, March 8, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,711
Claims priority, application Great Britain, Mar. 11, 1970, 11774/70
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **22 Claims**



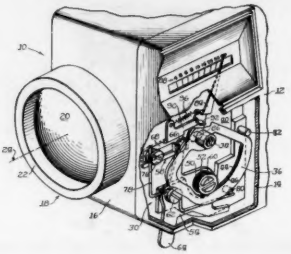
Optical arrangements are described in which an optical beam is reflected by means of a mirror on to a working surface, and is caused to be deflected over the working surface but is automatically maintained continuously in focus on the working surface during such deflection. In some embodiments, the mirror is a plane mirror which is movable about two transverse axes to deflect the beam over the surface, and the optical beam is directed on to the plane mirror via a focussing element, such as a convex lens or mirror, which is linearly movable to maintain the focus on the working surface. In other embodiments, the mirror is fixed and concave, and the optical beam passes through an axial aperture in the mirror and strikes a convex mirror which reflects it on to the concave mirror and thence on to the working surface. The convex mirror is angularly movable about two transverse axes to deflect the beam over the working surface and is also linearly movable along the axis of the concave mirror to maintain the focus.

3,797,909

DIRECT READING TRIANGULATION FOCUSING MECHANISM

Theodore M. Hadzimahalis, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 5, 1972, Ser. No. 286,362
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **7 Claims**



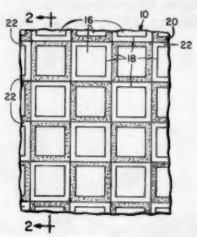
An improvement in a distance determining mechanism for a camera having a focusable objective lens, the mechanism including a pendulous member having a cam surface formed with fine pitched teeth with which similar teeth on a cam follower cooperate to cause adjustment of the lens to a focus condition and, after adjustment, to cause substantially positive locking of the lens in adjusted position while enabling manual focusing through actuation of an externally extending focusing control. By the improvement, the mechanism permits more positive movement of an indicator relative to a focusing scale responsive to the focus condition of the objective lens which is positioned responsive to orientation of the pendulous member of the focusing mechanism.

3,797,910

FIBER OPTIC DEVICE HAVING SOME FIBERS CLAD WITH ABSORBING GLASSES

Ralph A. Westwig, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 14, 1971, Ser. No. 180,365
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **9 Claims**



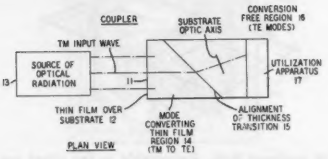
Disclosed is a fiber optic device of the type having a plurality of light-conducting optical fibers secured together in side-by-side relation so that corresponding opposite ends of the fibers cooperate to define first and second faces. Some of the fibers have a single cladding of light absorbing material, the remainder of the fibers having a single cladding of non-absorbing material. The combined effect of this combination of fibers results in image transfer devices capable of transferring an image with high resolution and only a moderate loss in light transmission and image storage devices capable of providing high resolution images having moderately high contrast.

3,797,911

THIN FILM OPTICAL COUPLERS EMPLOYING MODE CONVERSION

Herwig Werner Kogelnik, Fair Haven, and Thomas Patrick Sosnowski, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 18, 1972, Ser. No. 298,785
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 8 Claims


COUPLER
SUBSTRATE OPTIC AXIS
CONVERSION FREE REGION 15 (TE MODES)
TM INPUT WAVE
SOURCE OF OPTICAL RADIATION
UTILIZATION APPARATUS 17
THIN FILM OVER SUBSTRATE 12
MODE CONVERTING THIN FILM REGION 14 (TM TO TE)
ALIGNMENT OF THICKNESS TRANSITION 15
PLAN VIEW

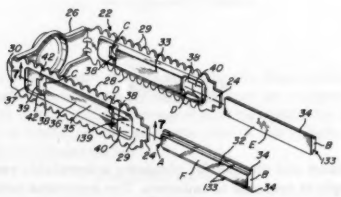
An input-output coupler for thin film optical waveguides is disclosed in which the substrate is anisotropic with its optic axis parallel to the plane of the film and the film index is intermediate the substrate indices. The input beam is appropriately polarized and directed through the substrate toward the film. The input beam is propagated obliquely to the optic axis during coupling and is propagated in a direction either orthogonal or parallel to the optic axis during guiding. The oblique propagation involves some conversion between TE and TM waves. Essentially, the input waves and the output waves of this coupling technique correspond to leaky guided waves in the film.

3,797,912

CYCLE PEDAL WITH REFLECTOR AND METHOD OF MANUFACTURING SAME

Robert Frank Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.

Filed July 10, 1972, Ser. No. 270,018
Int. Cl. G02b 5/12
U.S. Cl. 350—99 21 Claims



A reflective cycle pedal is described wherein reflective elements are retained in the pedal frame without the use of additional retaining plates, rivets, screws, weldments, or adhesive material of any kind; the reflector elements are retained in the pedal framed by retaining means which are integral with the legs of the pedal frame.

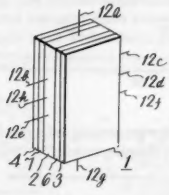
3,797,913

ELECTRO-OPTIC DISPLAY DEVICE

Toshio Mori; Chiaki Kojima, and Hidemasa Tamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1971, Ser. No. 202,789
Claims priority, application Japan, Nov. 30, 1970, 45-106132
Int. Cl. G02b 27/28; F02f 1/26
U.S. Cl. 350—150 8 Claims

In an electro-optic display device comprising a polarizing plate and a display panel having a plurality of electro-optic elements arranged in a predetermined pattern on a suitable base plate, in which a suitable voltage is selectively supplied to the plurality of electro-optic elements to alter the angle of



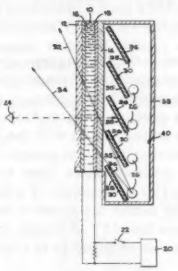
double refracted light in response to the voltage, the electro-optic display device further comprising a means formed between the display panel and the polarizing plate for supplying circular polarized light to the electro-optic elements.

3,797,914

DISPLAY DEVICE EMPLOYING LIQUID CRYSTAL MATERIALS

William Ross Aiken, Los Altos Hills, Calif., assignor to Display Technology Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 126,054, March 19, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,707
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 4 Claims



A display device settable between transparent and translucent or opaque conditions comprising of a layer of a material changeable between light-transmitting and light-scattering conditions in response to electric fields, such as the liquid crystal materials, means for setting up electric fields through said layer, a plurality of superposed relatively spaced, slanting slats located behind the rear face of said layer, said slats having dark, light absorbing front surfaces and bright, light-reflecting rear surfaces, a source of light located behind said slats adjacent the rear ends thereof, for the slats to conduct the light generated by said source obliquely through said layer in such a manner that it misses the eyes of an observer in front of said layer, and a cover arranged over said source of light and having a light-reflecting inner surface.

3,797,915

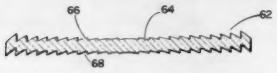
BINOCULAR RANGEFINDER-VIEWFINDER WITH FRESNEL OPTICS

Edwin H. Land, Cambridge, and Philip Norris, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 108,084, Jan. 20, 1971, Pat. No. 3,719,422. This application Sept. 25, 1972, Ser. No. 291,558
Int. Cl. G02b 3/08
U.S. Cl. 350—211 2 Claims

This disclosure depicts a number of novel Fresnel imaging structures incorporated in photographic rangefinding and

viewfinding means. Each Fresnel imaging structure is both focal and afocal for simultaneously providing a view of a



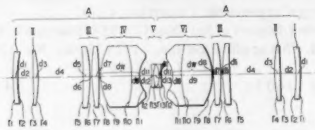
selected field and for projecting into the field a virtual image of a rangefinding or framing reticle.

3,797,916

HIGH RESOLVING-POWER DUPLICATING LENS OF UNIT MAGNIFICATION

Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1972, Ser. No. 217,598
Claims priority, application Japan, Jan. 20, 1971, 46-229
Int. Cl. G02b 9/64
U.S. Cl. 350—214 **1 Claim**



A high resolving-power duplicating lens of unit magnification having the lens arrangement of longitudinal symmetry in which at the opposite ends of the center, negative meniscus lenses (I)(I) with the concave surfaces facing to the center, next to them positive lenses (II)(II) with the convex surfaces facing to the center, next to them lens groups (III)(III) consisting of two or more positive lenses, next to them negative meniscus lenses (IV)(IV) of doublets of which the concave surfaces nearest to the center are faced to the center, and a central double-concave lens (V) of singlet or multiplet symmetrical as a whole are so arranged as to satisfy the following conditions:

(1) $0.4 f_A < d_{IV} < 1.5 f_A$
(2) $0.2 f_A < d_4 < 1.0 f_A$
(3) $0 < -f_A/f_V < 0.8$
(4) $0.01 < n_{IV_1} - n_{IV_2} < 0.2$

where

f_A : focal length of each of the two blocks (A)(A) in air, into which the lens system is divided at the center
d_{IV} : axial thickness of lens (IV)
d_4 : distance between lens (II) and lens group (III)
f_V : focal length of lens (V)
n_{IV_1} : refractive index of the outside lens of lens (IV)
n_{IV_2} : refractive index of the inside lens of lens (IV)

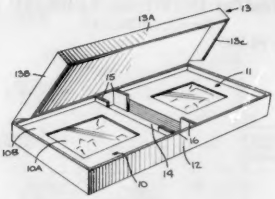
3,797,917

BOX AND VIEWER ASSEMBLY FOR SLIDES

Roberto Barbour, Roslyn Harbor, N.Y., assignor to Cryton Optics, Inc., Roslyn, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,034
Int. Cl. G02b 7/02
U.S. Cl. 350—250 **2 Claims**

A box and lens assembly adapted to store photographic slides and being convertible into an optical viewer for inspecting the slides, each of which is constituted by a transparency mounted in a frame. The assembly comprises a rectangular container dimensioned to accommodate two stacks of slides in side-by-side relationship and a cover hinged thereto. The cover is provided with a peripheral flange having a side section and two end sections which, when the box is closed, lie against the corresponding walls of the container. The cover is fabricated of flexible material whereby the end sections of the flange may be pulled out slightly to define parallel sockets, one of which is usable to engage the lower margin of a slide to be viewed whereby the slide is held erect with its transparency



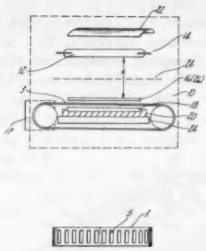
exposed to ambient light. Receivable in the other socket is a Fresnel lens plate having the same dimensions as a slide, the optical characteristics of the plate being coordinated with the spacing between the parallel socket to afford an enlarged, well-focused image of the transparency.

3,797,918

OPTICAL APPARATUS WITH SPECTRAL FILTERS FOR TESTING FASTNESS OF COLORS

Dieter Kockott, Dammstrasse 11, D6451 Ruckingen, Germany

Continuation-in-part of Ser. No. 5,554, Jan. 26, 1970. This application Oct. 12, 1971, Ser. No. 188,567
Int. Cl. G02f 1/30
U.S. Cl. 350—269 **4 Claims**



Apparatus and method for obtaining a detectable variation in a sample in response to radiation. The apparatus includes a source of radiation and a sample to be tested. Filters and a moveable shading device are disposed between the source of radiation and the sample to provide for irradiating different portions of the sample with radiation of the same light intensity per unit time to study the influence of different wavelengths on a sample. The apparatus enables one to determine the minimum wavelength which will bring about a degradation or disintegration of the sample under test.

3,797,919

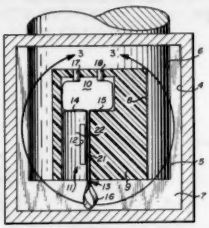
HIGH-SPEED SHUTTER

James O. McClenahan, Milpitas, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 30, 1972, Ser. No. 267,768
Int. Cl. G03b 9/08; G02f 1/30
U.S. Cl. 350—270 **5 Claims**

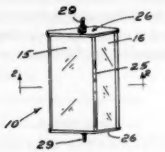
A shutter element is formed by a loop of an electrically conductive ribbon disposed adjacent to the end of a passageway

to be shuttered. The shuttered end of the passageway is cut at an acute angle. The two leg portions of the ribbon loop are closely spaced to each other and disposed in a plane parallel to the axis of the passageway. A pulse of high current is switched through the loop to cause the current flowing in opposite



directions through adjacent leg portions of the ribbon to produce a magnetically induced pressure on one of the legs of the ribbon forcing the leg over the end of the passageway in gas tight sealing engagement therewith, thereby blocking same.

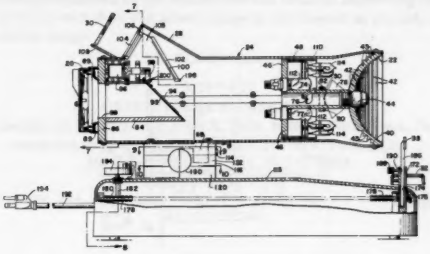
3,797,920
WIDE ANGLE MIRROR
Theodore L. Beach, Jr., P.O. Box 366, Donnelsville, Ohio
Filed June 19, 1972, Ser. No. 263,925
Int. Cl. G02b *5/08*
U.S. Cl. 350—303 **7 Claims**



Main and auxiliary mirrors are angularly disposed at an obtuse angle for viewing a trailing portion of an elongate or articulated vehicle during turning or parking operations thereof as well as traffic conditions at the rear of the vehicle during forward movement thereof.

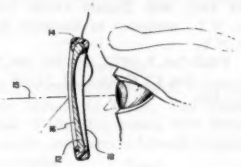
3,797,921
PHOTOGRAPHING APPARATUS FOR DETERMINING CORNEAL RADIUS
Lauren G. Kilmer; McCabe C. Lively, both of Temco Manufacturing Company, 1826 N. Kingston Pl., Tulsa, Okla., and Alvin E. Reynolds, c/o International Diagnostic Instruments Limited, 3540 E. 31st St., Tulsa, Okla.
Filed June 5, 1972, Ser. No. 259,660
Int. Cl. A61b *3/14*; **G03b** *19/02*
U.S. Cl. 351—7 **12 Claims**

A camera by means of which a doctor can obtain a picture of the eye of a patient, having superimposed thereon one or more concentric circles, permitting determination by the doctor of the radius of the eye cornea so that a contact lens can be properly fitted. The patient supports his head on a chin rest and looks into an opening in the center of a spherically concave screen, focusing on a light dot. Light from within the camera passes through one or more concentric rings in the concave screen to form light circles on the eye cornea. On a viewing screen on the opposite end of the camera the doctor sees an image of the patient's eye with the circles superimposed thereon. The doctor can adjust the elevation of the patient's eye, the rotational alignment between the camera and the patient, and the focus of the image. When these adjustments are satisfactory, the doctor actuates the device to open the camera shutter and energize flash tubes, exposing film to the image of the patient's eye as had been seen by the doctor.



Light from the flash tubes passes through the one or more concentric rings so that one or more light circles appear on the image of the eyeball as photographed on the film. The film is preferably immediately developed within the camera. From the circles on the resulting print, the doctor determines measurements required for the proper fitting of a contact lens.

3,797,922
AZYGOUS OPHTHALMIC LENS AND SPECTACLES FOR CORRECTING PRESBYOPIA
William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation of Ser. No. 197,852, Nov. 11, 1971, abandoned.
This application May 10, 1973, Ser. No. 358,846
Int. Cl. G02c *7/06*
U.S. Cl. 351—169 **1 Claim**

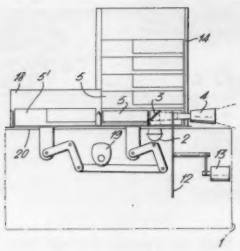


A concept for a polyfocal ophthalmic lens is described. The polyfocal ophthalmic lens has at least one analytic refracting surface whose power changes uniformly from its top to its bottom. Vision-correcting eyeglasses incorporating polyfocal ophthalmic lenses offer a wearer several lens powers to choose among for different seeing tasks. Polyfocal ophthalmic lenses eliminate the distracting refractive discontinuity present in ordinary bi-focal ophthalmic lenses. In one embodiment of the polyfocal ophthalmic lens, the net refracting power changes so the upper portion of the ophthalmic lens is suitable for viewing distant objects, while the lower portion is suitable for reading and the central portion is suitable for intermediate seeing tasks.

3,797,923
CINEMATOGRAPHIC PROJECTOR
Louis Thevenaz, Sainte-Croix, Switzerland, assignor to Bolex International SA, Sainte-Croix, Switzerland
Filed Oct. 10, 1972, Ser. No. 296,220
Int. Cl. G03b *21/04*
U.S. Cl. 352—123 **11 Claims**

A movie projector for showing film cassettes that each have a take-up spool and a feed spool, the projector comprising a

cassette projection station and a cassette rewind station, transfer apparatus for moving each of at least two cassettes one after the other into the projection station then into the rewind station, a first mechanism for engaging the take-up spool when in the projection station to wind film onto the cassette take-up spool and a second mechanism for engaging the feed spool when in the rewind station to rewind film onto the cassette feed spool, drive apparatus for concurrently driving the first and second mechanisms to concurrently wind and rewind the respective cassettes, and apparatus for controlling engagement of the first and second mechanisms with the respective take-up and feed spools for the winding and rewinding thereof and disengagement thereof to permit movement of the cassette from the projection station into the rewind station by the transfer apparatus.



3,797,924

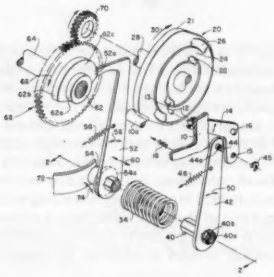
FILM FEEDING MECHANISM FOR MOTION PICTURE PROJECTORS

Donald Earl Day, and Donald Oscar Easterly, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,708

Int. Cl. G03b *1/22, 21/48*

U.S. Cl. 352—194 **7 Claims**



A film feeding mechanism for a motion picture projector includes a member having a plurality of cam surfaces which cooperate with a cam follower for periodically causing a film claw to engage a filmstrip. Also included in the film feeding mechanism is a cooperating cam actuated means which is operative to periodically shift the cam follower between predetermined cam surfaces to provide projection speeds other than the speeds provided by any one of the cam surfaces individually.

3,797,925

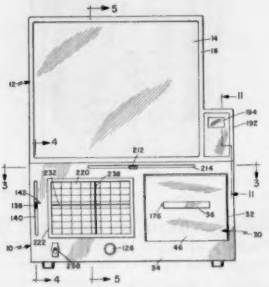
MICROFICHE READER WITH INDEXED FICHE MAGAZINE

Louis A. Smitzer, San Diego, Calif., assignor to Ovonic Image Systems, Inc., San Diego, Calif.

Filed Nov. 3, 1971, Ser. No. 195,324

Int. Cl. G03b *23/08*

U.S. Cl. 353—27 **4 Claims**



A microfiche reader incorporating an indexed magazine from which fiche cards are selectively extracted, positioned horizontally for viewing and returned to the magazine, all with a single lever. A second lever moves the projection lens and lamp assembly vertically relative to the fiche card, a position indicating grid showing the frame of the fiche card in projection position. The image is projected on a large viewing screen, at the side of which is a small screen showing the identification of the fiche card being viewed. An index frame carrying the contents of the specific magazine, can be moved into projection position to facilitate selection of individual cards and frames.

3,797,926

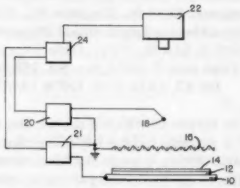
IMAGING SYSTEM EMPLOYING IONS

Richard A. Fotland, Warrensville Heights, and Virgil E. Straughan, Euclid, both of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed Aug. 27, 1971, Ser. No. 178,521

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **21 Claims**



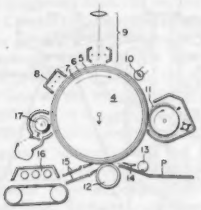
In the formation of visible copies of an image, the use of an ion modulating array provided with an asymmetrical photosensitive coating together with means to electrostatically develop the ion image.

3,797,927

ELECTROPHOTOGRAPHIC COPYING MACHINE

Toru Takahashi; Yoshio Ito, both of Tokyo, and Hidejiro Kodowaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,235
Claims priority, application Japan, May 20, 1971, 46-34345; May 24, 1971, 46-35760
Int. Cl. G03g *15/02*
U.S. Cl. 355—3 7 Claims



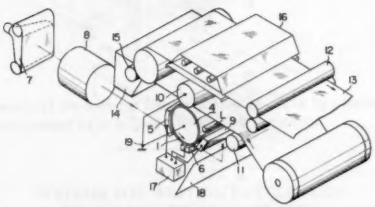
An improvement of an electrophotographic copying machine is provided in which a plurality of grounded grid electrodes are interposed between image forming means and surface of a photosensitive member of the type comprising an electrically conducting support, a photoconductive layer and an insulating layer, wherein the image forming means includes a device for focusing a light image and simultaneously discharging the charged surface of the insulating layer. The perfect discharge of the surface of the photosensitive member can be attained with this apparatus an image having a high contrast, excellent tone reproducibility and uniform sensitivity may be reproduced without being adversely affected by the environmental conditions.

3,797,928

METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHY

Koichi Kinoshita, Narashino, and Masanori Watanabe, Tokyo, both of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 108,733, Jan. 22, 1971, Pat. No. 3,730,709. This application Nov. 30, 1972, Ser. No. 310,881
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 6 Claims



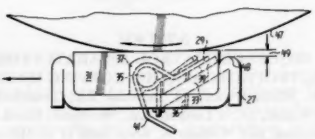
In a method of electrophotography comprising the steps of applying a first electric field across a photosensitive element including a photoconductive layer manifesting persisting internal polarization and a highly insulative layer integrally bonded to one side of the photoconductive layer for depositing a charge of one polarity on the surface of the highly insulative layer, and applying a second electric field across the photosensitive element for depositing a charge of the opposite polarity concurrently with projection of a light image upon the photoconductive layer whereby to form a latent image on the surface of the highly insulative layer corresponding to the light image, a third electric field is applied across the photosensitive element for depositing a charge of the same polarity as the charge deposited by the second electric field for improving the contrast and then the latent image is developed to provide a visible image.

3,797,929

GRIPPER-BAR BUMPER PADS

Gordon D. Deacon, and John A. Toto, both of Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,865
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 3 Claims



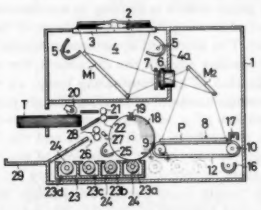
An endless-chain transport system for a photocopy machine is described for gripping copy sheets at a paper-feed station, transporting the copy sheets past a photoconductive drum while holding surfaces of the copy sheets in close proximity to the drum, and transporting the copy sheets to a copy-sheet-delivery station. The transport system comprises gripper bars mounted on transport chains having gripper jaws which are opened and closed by cams to grip and release the copy sheets. Gripper-bar bumper pads are mounted on the gripper bars to hold the gripper bars away from the photoconductive drum.

3,797,930

ELECTROPHOTOGRAPHIC COPIER

Susumu Tanaka; Masayoshi Inoue; Yuji Enoguchi, all of Osaka; Kenichi Wada, Toyokawa, and Takao Fujiwara, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 17, 1972, Ser. No. 244,750
Claims priority, application Japan, May 18, 1971, 46/33806
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 8 Claims



A copier comprises a photosensitive member substantially in the form of an endless belt and composed of a flexible base subjected to electric conductive treatment, and inorganic semiphotoconductive layer and organic semiphotoconductive layer superposed on the base; an exposure station for exposing

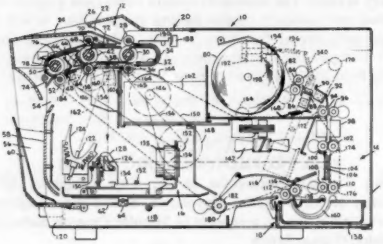
the electrically charged sensitive surface of the photosensitive member to reflected light from the face of an original document to form an electrostatic latent image thereon; drive means for driving the photosensitive member during each cycle of transfer operation; means for driving transfer paper in synchronism with the travelling photosensitive member formed with the latent image so as to bring the paper into fitting contact with the member, the transfer paper being composed of an electroconductive base and a dielectric coating thereon; means for electrically grounding the bases of both photosensitive member and transfer paper fitted together to transfer the electrostatic latent image onto the transfer paper; and developing means for supplying toner to the transfer paper bearing the transferred electrostatic latent image to visualize the image. The copier further includes color separation filters in the exposure station and developing sections for three or four colors to be operated in accordance with the change of the filters. A color copy is obtained by repeating a copying cycle three or four times.

3,797,931

SEQUENCE CONTROL APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Joseph F. Miciukiewicz, 78 Shawnee Rd., Trumbull, Conn.; Philip Pollak, Jr., 4 Lookout Ln., Westport, Conn.; Douglas I. Morrison, and William A. Ross, both of 10 Hillcrest Ave., Darien, Conn.

Filed Sept. 23, 1970, Ser. No. 74,737
Int. Cl. G03g *15/00*
U.S. Cl. 355—13 **16 Claims**



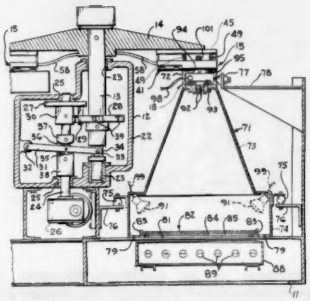
An apparatus for controlling the sequential operation of several functions of a fully automatic electrophotographic copying machine. The copying machine has the capability of projecting an image of indicia on a moving document to a piece of copy paper which is moving in synchronism with the document, and of developing a visible image of the indicia on the copy paper. The disclosed apparatus controls, in response to sensing the leading edge of the document, the energization and de-energization of an illuminating lamp, an electrostatic charger, the commencement of feeding of copy paper, the moment of operation of a severing mechanism for severing a sheet of copy paper from a roll thereof and the feeding of a minimum length of copy paper, regardless of the length of the original document, to prevent pieces of copy paper less than that minimum length from being fed through the machine. The apparatus has features of adjustability which assure that sheets of copy paper will be severed from the roll having a length in exact accordance with the length of the original document, and which assure that the indicia on the original document will be reproduced on the sheet of copy paper in exact accordance with the position of the indicia on the document.

3,797,932

VIBRATION ISOLATION ARRANGEMENT FOR APERTURE CARD PHOTOGRAPHIC COPYING MACHINE

Dale S. Endter; Edwin E. Miller, both of Rochester, and Harry L. Westacott, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,433
Int. Cl. G03b *27/00*
U.S. Cl. 355—18 **5 Claims**



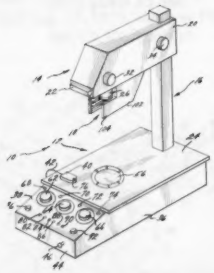
A photographic copying machine is adapted to expose and process a photosensitive film insert on an aperture card, respectively at exposing and processing stations. The machine includes a vibration isolation arrangement for isolating the exposure station and an aperture card, located thereat, from vibration produced by other members of the machine. This permits a relatively long exposure of the film insert without sacrificing image resolution or sharpness.

3,797,933

APPARATUS FOR MAKING COLOR ENLARGEMENTS

Arthur J. Sable, Tall Timbers, Colo., assignor to Sable Photo Works, Inc., Tall Timbers, Colo.

Filed Feb. 3, 1972, Ser. No. 223,081
Int. Cl. G03b *27/76*
U.S. Cl. 355—35 **14 Claims**



This invention involves a system for making color enlargements from a transparency, either positive or negative, wherein a color analyzer light beneath a transparent window in the base is used to compare the relative intensities of the red, blue and green light contained in a diffused image transmitted by an unknown transparency with the predetermined intensities of these same colors of light transmitted by a preselected reference transparency in order to determine

the relative color balance therebetween. The overall exposure time found necessary to produce an acceptable print at the chosen aperture and degree of image magnification is then determined through further comparison with the preselected reference transparency and this information is coupled with the ratio of relative intensities to arrive at red, blue and green exposure intervals which are separately though simultaneously timed. Two filters are mounted for independent movement into the path of the projected image, the first being of a hue selected to block the color of light selected from the above group already known to require the shortest exposure time, and the second being of a hue selected from the remaining two colors adapted to block that color previously found to require the next shortest exposure time. Control circuitry operatively interconnects the timing and filter actuating mechanisms so as to automatically time the exposures in accordance with the predetermined and preset schedule. In doing so, the circuit functions upon actuation to turn on the enlarger lamp and initiate all three time intervals. Next, it automatically extends the first filter into its extended operative position when the shortest of the three color exposure intervals times out and then it extends the second filter into operative position when the next shortest predetermined color exposure interval times out. Finally, the control circuit becomes operative to shut off the enlarger lamp when the predetermined overall exposure time expires thus terminating the last and longest of the three exposures. The unique combination of subassemblies which cooperate with one another to carry out the foregoing novel procedure together with the procedure itself constitute the subject matter hereof.

3,797,934

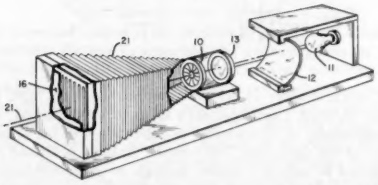
SYSTEM AND METHOD FOR MAKING MULTIGRADED TV MASKS

Gerald M. Miller, Sylvania, Ohio, and George M. Munter, Roseville, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 838,459, July 2, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,171

Int. Cl. G03b *27/26*

U.S. Cl. 355—52 **3 Claims**



A method for forming a multigraded negative by utilizing an arcuate shaped light diffuser of uniform thickness.

3,797,935

SYSTEMS FOR WRITING PATTERNS ON PHOTOSENSITIVE SUBSTRATES

Raymond Marcy, Paris, France, assignor to Thomson-CSF Paris, France

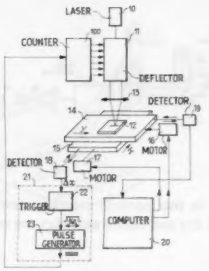
Filed Apr. 25, 1972, Ser. No. 247,345

Claims priority, application France, May 4, 1971, 71.16048

Int. Cl. G03b *27/32*

U.S. Cl. 355—53 **6 Claims**

To carry out the exposure of a photoresist at a pattern scale of 1 : 1, a laser writing-in beam is projected onto the latter. The substrate carrying the photoresist undergoes displacements in at least one of two mutually perpendicular directions. Positioning of the laser beam is obtained through the medium of a deflection system comprising a device for generating



pulse trains which control a digital optical deflector. The pulse trains are triggered by electrical pulses supplied from interferometric means monitoring the displacement of the substrate. The whole duration of each one of said pulse trains is smaller than the time interval between the triggering pulses.

3,797,936

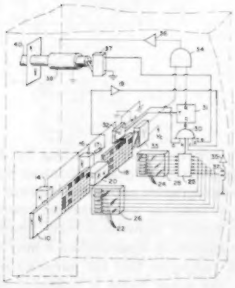
ELECTRONIC LOCKING SYSTEM

Andre C. Dimitriadis, New York, N.Y., assignor to Intertech, Inc., New York, N.Y.

Filed July 13, 1972, Ser. No. 271,251

Int. Cl. G06k *9/08*; **E05b** *47/00*

U.S. Cl. 356—71 **9 Claims**



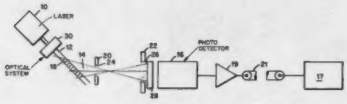
An opto-electronic locking system for an entry door which is provided with an optically encoded key. The key is decoded internally by a sensing device which translates the light code detected into electrical levels which are compared with a stored code. If the code on the key corresponds to the stored code, then the circuit activates an electromechanical mechanism which in turn opens the lock. If the code on the key is not correct, then the electrical circuit activates an alarm or a security system or both.

3,797,937

SYSTEM FOR MAKING PARTICLE MEASUREMENTS

Frederick M. Shofner, Knoxville, Tenn., assignor to Environmental Systems Corporation, Knoxville, Tenn.

Filed Mar. 1, 1972, Ser. No. 230,757
Int. Cl. G01n 15/02
U.S. Cl. 356—102 7 Claims



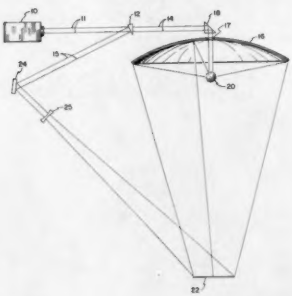
A system for in situ particle measurement employing light scattering. Both dry and liquid particles are measurable.

3,797,938

OPTICAL APPARATUS FOR MEASURING DEFORMATION OF PARABOLIC ANTENNAS

Lee O. Heflinger, Torrance, and Ralph F. Wuerker, Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 16, 1972, Ser. No. 297,745
Int. Cl. G01b 9/02
U.S. Cl. 356—109 7 Claims



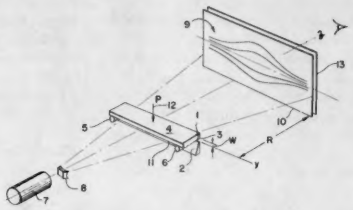
An optical apparatus for recording by double exposure either a hologram or a holographic contour map of a parabolic antenna. The holographic apparatus requires a laser and is arranged so as to function with practical lasers such as a ruby laser having limited coherence and limited light power. Although the antenna is a paraboloid it may be considered an ellipsoid with conjugate foci for purposes of this invention. Accordingly, the scene beam is reflected onto the antenna from a point image source close to one of the foci of the parabolic antenna while the hologram is at the conjugate focal point of the antenna. The path length of the reference beam is matched to that of the scene beam to provide temporal coherence matching. The light may be scattered by a diffuse reflecting ball in one of the foci of the antenna or alternatively a specularly reflecting ball may be used. This ball may be gold plated to improve the reflection of the ruby light. For contouring of the antenna one of the reflectors in the path of the reference beam may be hinged to change the angle of the reference beam between exposures, each being taken at a different wavelength.

3,797,939

DIFFRACTOGRAPHIC MEASUREMENT OF PROFILE

Timothy R. Pryor, 5423 York Ln., Bethesda, Md.

Continuation-in-part of Ser. No. 253,421, March 15, 1972, which is a continuation-in-part of Ser. No. 751,615, Aug. 8, 1968, Pat. No. 3,664,739. This application May 23, 1972, Ser. No. 256,099
Int. Cl. G01b 9/02
U.S. Cl. 356—111 38 Claims



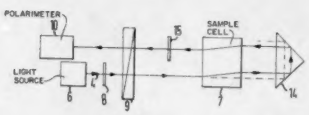
A method and apparatus for dimensional gaging of object profiles is disclosed. A boundary of the tested member is located adjacent a reference member to provide, on illumination with essentially monochromatic and space coherent electromagnetic radiation, an interference pattern whose intensity distribution is a function of the relative positions of the members. Analysis of these interference patterns gives the profile of the tested member.

3,797,940

REFRACTOMETER WITH DISPLACEMENT MEASURED POLARIMETRICALLY

Raymond John King, Teddington, England, assignor to National Research Development Corporation, London, England

Filed Dec. 8, 1971, Ser. No. 206,080
Claims priority, application Great Britain, Dec. 9, 1970 58556/70
Int. Cl. G01n 21/46
U.S. Cl. 356—134 3 Claims



A refractometer in which a monochromatic light beam passes through a test specimen so as to be displaced, either translationally or rotationally, in dependence of the refractive index of the specimen. The beam is linearly polarised and is subjected to optical rotation through an angle depending on the extent of the displacement, the optical rotation being measured with a polarimeter to give a measure of refractive index.

3,797,941

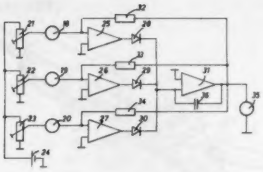
PHOTOELECTRIC EXPOSURE CONTROL DEVICE

Karel Germanus Staes, Wilrijk, and Luc Yves Natens, Berchem, both of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Division of Ser. No. 843,597, July 22, 1969, Pat. No. 3,748,981. This application Jan. 18, 1972, Ser. No. 218,851
Claims priority, application Great Britain, July 22, 1968, 34896/68
Int. Cl. G01j 3/46, 1/42
U.S. Cl. 356—175 5 Claims

A method and apparatus for photographically recording colour subjects onto recording material which is spectrally sensitive in different regions of the visible light spectrum.

The luminance of the colour subject is measured in at least two of the different regions wherein the recording material is sensitive, the exposure of the recording material is predetermined in taking the measured luminance of the subject in the



region of greatest luminance more into acount than the measured luminance(s) of the region(s) of smaller luminance, and the recording material is exposed to the colour subject to an extent which is in accordance with said predetermined exposure.

3,797,942

METHOD AND APPARATUS FOR ANALYSIS BY LIGHT ABSORPTION SPECTROMETRY

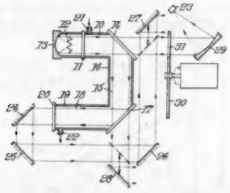
Bertrand Joly, Ville Davray, France, assignor to Sourian & Cie, Boulogne-Billancourt, France

Filed Dec. 11, 1972, Ser. No. 313,623

Claims priority, application France, Feb. 4, 1972, 72.003895

Int. Cl. G01j *3/46*; **G01n** *21/34*, *21/06*

U.S. Cl. 356—181 **10 Claims**



The invention relates to the analysis of gas by light absorption, suitable for use in analysing the exhaust gasses of automobile engines. The device comprises a tank receiving the gas to be analysed and in which a source sends a beam of light. It comprises at least one interferential filter placed on the path of the beam and at an angle, not of 90°, with this latter, the said filter transmitting the larger portion of the energy of the beam to a detector in a predetermined band of wave lengths and reflecting into the tank the larger portion of the remaining energy in the form of a reflected light beam.

3,797,943

SURFACE INSPECTING APPARATUS

Yukio Nagao, and Chiaki Fukazawa, both of Tokyo, Japan, assignors to Tokyo Shibawa Electric Company, Ltd., Saiwai-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,222

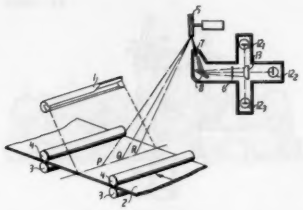
Claims priority, application Japan, Aug. 31, 1971, 46-66877

Int. Cl. G01n *21/32*

U.S. Cl. 356—200 **6 Claims**

A surface inspecting apparatus is provided and includes a light source which illuminates the surface of an object to be inspected.

A slit plate having a plurality of slits of different shape which determine the field of vision for the object is provided and is arranged in the path of the reflected light from the object to be inspected. A plurality of photo-electric conversion devices are provided for converting the reflected light from the object to be inspected which passes through the slits. Further means are provided for scanning the field of vision. By detecting the change of the light quantity of the reflected light



from the object to be inspected which passes through the slits by the photo-electric conversion devices, it can be readily determined whether defects in the object to be inspected exist or not. Also by comparing the output of each of the photo-electric conversion devices, the shape of any defect can be determined.

3,797,944

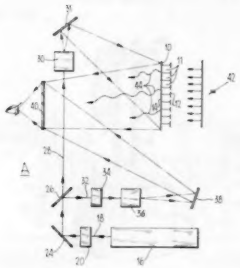
NON-DESTRUCTIVE TESTING OF ACOUSTICAL HONEYCOMB PANELS

George R. Urquhart, South Laguna, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Nov. 8, 1972, Ser. No. 304,625

Int. Cl. G01n *21/00*, *29/04*

U.S. Cl. 356—237 **2 Claims**

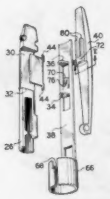


A time average holographic transparency photograph is made of the imperforate surface of acoustical honeycomb panel having a plurality of cells while the perforate surface is subjected to sound energy having a known frequency equal to the designed resonant frequency of the panel cells, and at a selected energy level. The transparency is then viewed while the laser beam is directed therethrough. Light swirls in the transparency indicate good cells, and dark areas indicate inoperative or faulty cells. Where unknown, the fundamental resonant frequency of the cells can be determined by making a real time image of the imperforate surface absent the sound excitation. The imperforate sheet is then viewed through the resulting real time image transparency while subjecting the perforate surface to a slowly varying range of sonic frequencies at a constant energy level until the swirls of resonance are displayed.

3,797,945
MULTI-TIP WRITING INSTRUMENT WITH SWINGING DOOR SELECTOR

Nathan A. Zepell, 1359 Santa Teresita Dr., Santa Barbara, Calif.

Filed Dec. 26, 1972, Ser. No. 318,668
Int. Cl. B43k 27/12
U.S. Cl. 401—33 14 Claims

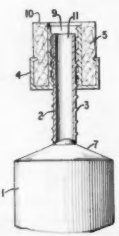


In a multi-tip writing instrument a clip, a push button or equivalent mechanism for projecting a writing tip, is provided with a hinged plate or swinging door for engaging the selected writing tip. The selector responds to gravity or inertial forces. Any suitable mechanism can keep the writing tip projected. Upon retraction, the push button or clip is retracted further than the writing tip to free the swinging door from engagement with the writing tips so that any new selection can be made by the hinged selector swinging to the desired writing point.

3,797,946
ADHESIVE SPREADER ASSEMBLY

Hans-Klaus Witzmann, Homburg/Saar, and Gabriella Kraus, Dusseldorf, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed June 18, 1971, Ser. No. 154,270
Claims priority, application Germany, June 19, 1970, 2030196
Int. Cl. B43k 8/00
U.S. Cl. 401—116 6 Claims



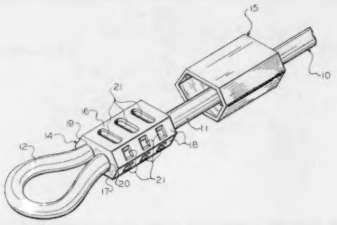
This invention relates to a spreader assembly for an adhesive container having an elongated dispenser neck comprising a holder containing a porous spreader adapted to adjustably, axially engage the elongated dispenser neck whereby the position of the holder containing said spreader can be adjusted relative to the dispenser neck.

3,797,947
IMPROVEMENTS IN SHEATHED CLAMPS FOR LOOPED CABLE ENDS

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Nov. 30, 1972, Ser. No. 310,702
Int. Cl. F16g 11/00
U.S. Cl. 403—23 3 Claims

An article protecting cable has polygonal inner clamps applied to contiguous portions of the cable inwardly of the looped end portions, said clamps being of a metal sufficiently malleable to permit swaging operations to form detents which project inwardly from all sides of the clamps to bite into and

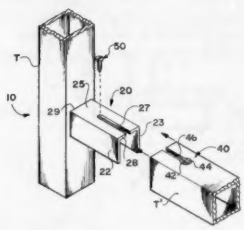


secure the cable extents which pass through the clamps. Covering the inner clamps and secured thereto are similarly shaped polygonal sheaths of a metal relatively harder than that of the clamps to resist cutting or deformation by a thief.

3,797,948
FASTENING MEANS FOR TUBULAR MEMBERS

Edwin Charles Weininger, 1508 Wendover Dr., High Point, N.C.

Filed Aug. 28, 1972, Ser. No. 284,278
Int. Cl. F16b 7/18
U.S. Cl. 403—245 6 Claims

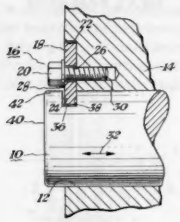


A channel-shaped member is attached at one end to a tubular member so that the channel may be axially inserted into another tubular member, thereby forming a construction unit for knock-down furniture supports. A longitudinally extending slot is provided in the channel-shaped member's web portion, extending through the web's outer edge and terminating short of its inner edge. When a spreading element such as a self-tapping screw is inserted into the longitudinally extending slot at any point along the longitudinal axis thereof, the channel member's spaced-apart walls are forced away from each other due to the weakening effect of the slot in the channel's web portion. Accordingly, the channel's spaced-apart walls make frictional engagement with the other tubular member's inner walls. A locking means associated with the other tubular member interlocks with the self-tapping screw. The other tubular member may be provided also with a longitudinal slot, extending from the outer edge thereof to and connecting with the locking means, which slot corresponds with the longitudinal slot provided in the channel-shaped member. As a result, the self-tapping screw may be prepositioned in place at the manufacturing location with field assembly consisting of merely sliding the other tubular member into place and tightening the screw.

3,797,949
KEEPER FOR RETAINING A PIN OR SHAFT

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed July 3, 1972, Ser. No. 268,896
Int. Cl. F16d 1/06
U.S. Cl. 403—355 4 Claims

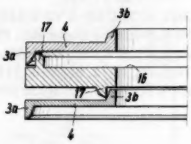


A keeper arrangement for a pin or shaft or the like, comprises a machine structure or like component having a counter-sunk recess intersecting a passage for the pin or shaft. The pin or shaft, when inserted into the passage, has a slot therein extending complementarily with the recess. A keeper plate is seated in the recess, where the plate is retained, and extends into the juxtaposed slot of the pin or shaft.

3,797,950
CONNECTING ARRANGEMENT

Hermann Ehrenberg, Michelstadt/Odenwald, Germany, assignor to Fouquet-Werk Frauz & Planck, Rottenburg a. Neckar, Germany

Continuation-in-part of Ser. No. 137,353, April 27, 1971, Pat. No. 3,679,245. This application Feb. 25, 1972, Ser. No. 229,517
Claims priority, application Germany, Mar. 2, 1971, 2109828; Mar. 2, 1971, 2109827; Mar. 17, 1971, 2112986
Int. Cl. B60b 27/06
U.S. Cl. 403—370 17 Claims

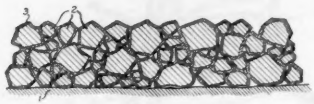


A cylindrical inner member is coaxially and with clearance surrounded by an annular outer member, and in the clearance is located a connecting arrangement having one or more annular elements of elastically yieldable material, each such element having a transverse wall portion extending transverse to the longitudinal axis of the inner member, and an inner and an outer annular wall-portion extending in opposite directions axially of the clearance beyond the transverse wall portion by a predetermined distance. A stressing arrangement is provided for stressing the annular element axially so as to effect radial displacement of the annular wall portions into frictional engagement with the inner and outer member, respectively. The stressing arrangement includes a pair of annular stressing members located at opposite axial sides of the annular element in the clearance and each having a side facing the annular element and provided with at least one annular bead projecting axially by a distance which is slightly greater than the distance by which the annular wall portions project beyond the transverse wall portion.

3,797,951
WEARING COURSES OF STONE AND MASTIC ON PAVEMENTS

Gerhard Zichner, Bergisch Gladbach, Germany, assignor to Strabag Bau-A.G., Cologne-Deutz, Germany

Filed Aug. 3, 1971, Ser. No. 168,662
Claims priority, application Germany, Aug 10, 1970, 2039627
Int. Cl. E01c 11/24
U.S. Cl. 404—19 17 Claims

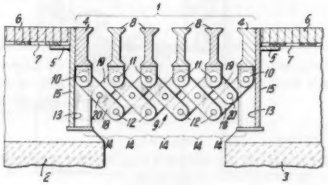


A hot mixture of stone and mastic is applied to the road foundation and compacted. The quantity and fluidity of the mastic is such that during and after the compacting, the mastic flows into the interstices between the stones forming the wearing course as a layer of mastic substantially free of voids, in which the stones are embedded, and with stone protruding from the upper surface thereof.

3,797,952
ROADWAY TRANSITION FOR EXPANSION JOINTS ON ROAD BRIDGES ETC.

Karl Werner Pommerening, Dortmund-Niederhofen, and Rainer Salewski, Dortmund, both of Germany, assignors to Rheinstahl AG, Essen am Rheinstahlhaus, Germany

Filed Dec. 1, 1971, Ser. No. 203,683
Claims priority, application Germany, Jan. 26, 1971, 2103415
Int. Cl. E01c 11/14
U.S. Cl. 404—52 11 Claims



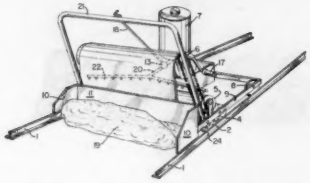
A roadway transition for expansion joints on road bridges and the like includes intermediate bars extending parallel to the joint edges. The bars are supported at at least two points along their lengths by vertically oriented lazy tongs having their hinges extending parallel to the joint edges, these lazy tongs forming supporting beams for the intermediate bars. The upper end hinges of the lazy tongs are fixedly articulated at points in the range of the joint edges, so that the upper and lower intermediate hinges are in common vertical planes, with the upper intermediate hinges lying, in any position of the lazy tongs, in the horizontal plane of the upper end hinges. Each intermediate bar has at least one supporting member engageable with another intermediate bar to prevent tilting. The lower end hinges of the lazy tongs may be mounted in vertical guide slots.

3,797,953

APPARATUS FOR THE LAYING AND ROLLING OUT OF COATING OR PAVING MATERIALS

Bertil Nils Lindskog, Backaskog, Sweden, assignor to System Research Inc., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,012
Int. Cl. E01c *19/28*
U.S. Cl. 404—103 4 Claims



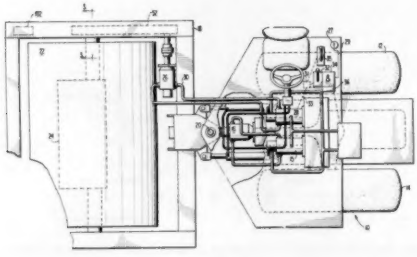
The present invention relates to an apparatus for laying and rolling out coating or paving materials, comprising a single means in the form of a roller for laying as well as rolling out and leveling fluid and solid materials within a wide range of temperatures, said roller having a shield plate to prevent the material being laid to pass over the overside of said roller.

3,797,954

GROUND COMPACTING APPARATUS

Jesse W. Harris, San Antonio, Tex., assignor to Tampo Manufacturing Company, San Antonio, Tex.

Continuation of Ser. No. 84,400, Oct. 27, 1970, abandoned. This application May 23, 1972, Ser. No. 256,195
Int. Cl. E01c *19/28*
U.S. Cl. 404—117 23 Claims



A method and apparatus for controlling the frequency of vibration of a vibratory compactor having a vibration producing means and a ground compaction member. The frequency of vibration of the compactor is varied to obtain approximately maximum compacting efficiency by varying the speed of cyclic movement of the vibration producing means in accordance with a detected phase relationship between the cyclic movement of the vibration producing means and the cyclic movement of the ground compacting member.

ERRATUM

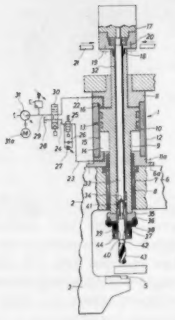
For Class 404—98 see:
Patent No. 3,797,958

3,797,955

BORING AND PUNCHING DEVICE

Werner Peddinghaus, Bruchhausen 21, Sprockhovel-Hasslinghausen, and Ludwig Regnebrecht, Gevelsberg, both of Germany, assignors to said Peddinghaus, by said Regnebrecht

Filed Nov. 10, 1972, Ser. No. 305,545
Claims priority, application Germany, Nov. 12, 1971, 2156226
Int. Cl. B23b *47/22*
U.S. Cl. 408—20 9 Claims



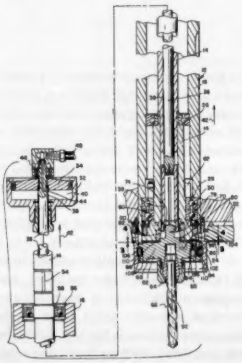
A boring and punching device in which a double acting fluid pressure operable piston is reciprocally mounted in a cylinder and divides the cylinder into two cylinder sections one of which is adapted per time unit to be acted upon by two different quantities of pressure fluid for boring and punching respectively. The device furthermore includes a connecting rod connected to the piston and having an axial passage therethrough through which extends a rotatable spindle. A tool holder is detachably and exchangeably connected to the lower end of the connecting rod and is adapted selectively to receive a punching tool or a boring tool which latter is adapted to be rotatably connected to the spindle.

3,797,956

MACHINE TOOL HOLDER AND DRIVING MEANS

Jack L. Bayer, 1640 E. Bethany Home Rd., Phoenix, Ariz., and Walter J. Breitkopk, 7720 E. Heatherbrae, Scottsdale, Ariz.

Filed Dec. 15, 1972, Ser. No. 315,610
Int. Cl. B23b *29/30*; B23c *1/00*
U.S. Cl. 408—35 7 Claims



A machine tool holder and driving means for holding various tools such as drills, taps, milling cutters, etc., wherein a

tool holder carries such a tool and is readily and easily removably connected to a driving spindle mechanism whereby several tools may be successively used and changed rapidly relative to said spindle mechanism; the tool holder having separate concentric means removably engageable with cooperative and conforming areas on the spindle mechanism for maintaining accurate concentric and axial alignment of the tool holder with the spindle, the said concentric means being disengageably held in accurate connection by a power operated draw bar in the spindle mechanism and spring loaded shear pin mechanism intermeshes between the tool holder and spindle to provide driving torque resistance; the said concentric means being devoid of conventional locking taper structure so as to be freely and accurately engageable and disengageable.

3,797,957

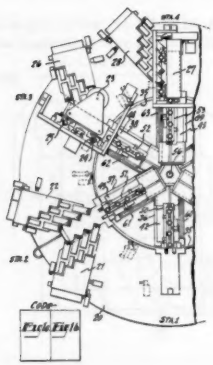
APPARATUS FOR SIMULTANEOUSLY DRILLING AND TAPPING A PLURALITY OF WORK PIECES AT EACH OF A PLURALITY OF POSITIONS

Nils Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Division of Ser. No. 118,218, Feb. 24, 1971, Pat. No. 3,733,142, which is a division of Ser. No. 763,043, Feb. 24, 1971, abandoned. This application Apr. 26, 1972, Ser. No. 247,573

Int. Cl. B23b *39/20*

U.S. Cl. 408—44 **2 Claims**



The apparatus, intended primarily for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of working positions includes an annular table supporting a plurality of tapping and drilling assemblies at a plurality of spaced working positions. Rotably mounted within the annular table support is a turret having a plurality of radial arms on which are supported retractible work supporting shuttles movable toward and from working positions adjacent the tapping and drilling assemblies mounted on the annular table. Means are provided for rotating the turret to successive working positions. A novel clamp and positioning means are mounted on the shuttles for holding and accurately positioning a work supporting cartridge. Novel multiple spindle tapping and drilling assemblies permit tapping and drilling from different angles, simultaneously of a plurality of rigidly held work pieces mounted on the shuttles.

3,797,958

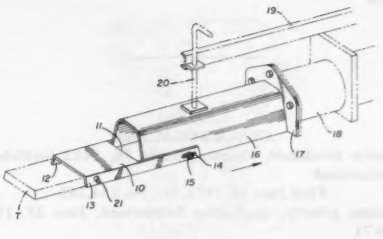
CUT OFF PLATE FOR CURBING MACHINES

Sante D. Lofaro, 30 Stanley Ave., Vienna, Ohio

Filed Oct. 6, 1972, Ser. No. 295,596

Int. Cl. E01c *11/28*

U.S. Cl. 404—98 **3 Claims**



A cut off plate is removably disposed horizontally adjacent the outlet of the compaction shoe of a curbing machine useful in extruding asphalt or concrete curb. The cut off plate divides the extruded curb permitting the upper portion to be removed as desirable in forming driveway approaches and the like.

3,797,959

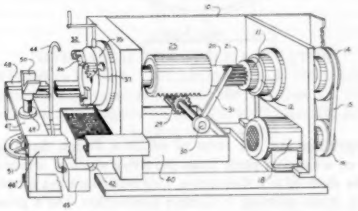
SHAFT CENTERING MACHINE

Floyd O. Davis, and Boyce W. Davis, both of 2326 E. Buckeye Rd., Phoenix, Ariz.

Filed Mar. 29, 1972, Ser. No. 239,055

Int. Cl. B23b *49/04*

U.S. Cl. 408—135 **2 Claims**



A machine for providing centering holes in shafts to be used on lathes which drills the holes in horizontally mounted shafts placed on a rack and moved into alignment with the cutting tool of the machine.

3,797,960

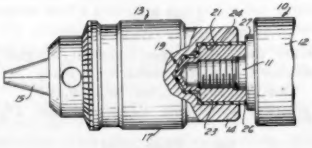
ELECTRICALLY INSULATED CHUCK FOR HAND-HELD DRILLS

Donald J. McCarthy, Wethersfield, Conn., assignor to The Jacobs Manufacturing Company, West Hartford, Conn.

Filed Feb. 23, 1972, Ser. No. 228,561

Int. Cl. B23b *31/12*

U.S. Cl. 408—240 **2 Claims**



A chuck including a rotatable metal body carrying jaws that are adjustable for holding a work bit. The body has a metal in-

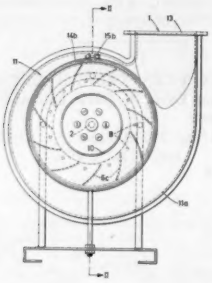
sert press fitted into a cavity for drivably coupling the body to the spindle of a hand-held drill. A coating of nylon plastics over the outer surface of the insert electrically insulates the body of the chuck from the insert and, as a consequence, from the spindle.

In a further embodiment, the spindle itself is coated with the nylon plastics material and is press fitted into the body of the chuck.

3,797,961
CENTRIFUGAL FAN

Heinrich Brechbuhl, Hombergstrasse 56, 3612 Steffisburg, Switzerland

Filed June 19, 1972, Ser. No. 264,243
Claims priority, application Switzerland, June 25, 1971, 9409/71
Int. Cl. F04d *29/40, 29/46, 29/50*
U.S. Cl. 415—126 **3 Claims**



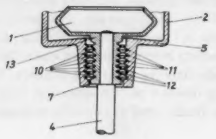
A centrifugal fan, the rotor of which is driven through the agency of a support plate from the drive shaft of a motor or from the shaft of a V-belt drive, and incorporating a housing having a drive opening, a suction connection and a pressure connection, and wherein the housing is formed of at least three components. The one housing component having the pressure connection can be shifted or displaced relative to the other two side components having the drive opening and the suction connection, and can be fixed by means of a holding mechanism in desired position. According to the invention, the rotor is detachably connected with the support plate, and the ring-shaped disks of the rotor having the buckets or blades each possess at least two holes arranged symmetrically with respect to one another and extending coaxially with respect to the axis of the rotor.

3,797,962
SPINNING TURBINE

Fritz Stahlecker, Bad Ueberkingen, Germany, assignor to Wilhelm Stahlecker GmbH, Reichenbach, Germany

Filed Jan. 25, 1972, Ser. No. 220,597
Claims priority, application Germany, Jan. 27, 1971, 2103718
Int. Cl. F04d *29/08*
U.S. Cl. 415—169 **13 Claims**

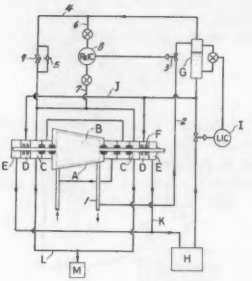
A spinning turbine in which the turbine itself is rotatable within a closed stationary housing in which a pressure below atmospheric is to be maintained. The shaft of the turbine which is to be rotatably mounted outside of the housing, preferably on indirect bearing means, extends through a slightly larger bore in the back wall of the housing or in an annular flange on this back wall so as to form an intermediate annular slot. One or both walls of the slot and/or the back wall of the turbine and/or the inner side of the back wall of the housing are provided with annular grooves which form air chambers to prevent air from passing from the outside to the interior of the housing.



3,797,963
SEALING APPARATUS FOR GAS COMPRESSOR

Takamasa Endo, 3-22-302 5-chome, and Shojiro Sugimura, 7436 Chikko, both of Tamano, Okayama, Japan

Filed Dec. 8, 1971, Ser. No. 205,918
Claims priority, application Japan, Dec. 16, 1970, 45-112107
Int. Cl. F01d *5/06*
U.S. Cl. 415—175 **1 Claim**



Apparatus for sealing the rotor shaft of gas compressor by sealing liquid fed under pressure comprising equalizing gas chambers, sealing liquid chambers, a head tank to feed the sealing liquid into the sealing liquid chambers, and means for regulating the pressure in the head tank according to the operating condition of the gas compressor.

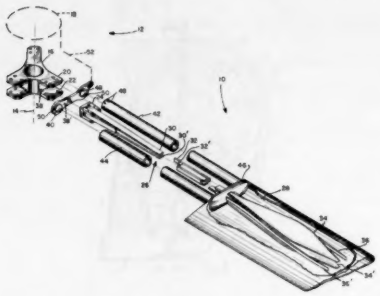
3,797,964
ROTARY WING APPARATUS

Thomas F. Hanson, 24204 Heritage Ln., Newhall, Calif.

Continuation-in-part of Ser. No. 832,366, June 11, 1969, abandoned. This application June 24, 1971, Ser. No. 156,307
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **10 Claims**

The specification discloses a novel wing, or blade, of the non-articulated or "rigid" type for a rotary wing aircraft. Ten-

sion, bending, and shear supporting elements such as bands of fibre glass are bonded in a force distributing manner to the body of the lifting blade and carried in a slender bonded fibre glass bundle-filler material assembly flexure arm from the inboard end of the lifting body to a hub attachment fixture. The



resultant flexure member is stiff in tension but torsionally relatively very soft. Torsional strength and pitch control to the blade is provided by a pair of torsionally rigid torque tubes in plane with and in a straddled relation with the tension arm flexure member.

3,797,965

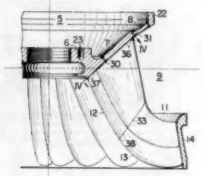
WELDED TYPE FRANCIS RUNNER

Hidenori Tonooka; Tetsuo Okuni; Hideo Ito; Michitada Kawano; Tadashi Jimbo, all of Hitachi, and Shunichi Fukasu, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 854,220, Aug. 29, 1969, abandoned. This application May 24, 1971, Ser. No. 146,068

Int. Cl. F01d *5/14*

U.S. Cl. 416—186 **5 Claims**



A welded type Francis runner adapted to be sectionalized into a plurality of units for transportation wherein the crown ring and the band ring of said runner are sectionalized along a plane in the direction of the axis of said runner, but the blades of said runner are not sectionalized.

3,797,966

CONTROL SYSTEM

Forrest Thomson Randell, Glasgow, Scotland, assignor to Weir Pumps Limited, Glasgow, Scotland

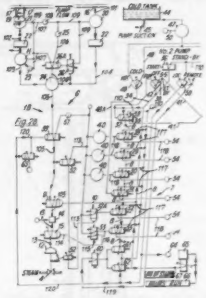
Filed Aug. 30, 1972, Ser. No. 284,876

Claims priority, application Great Britain, Sept. 10, 1971, 42256/71

Int. Cl. F04b *49/00*

U.S. Cl. 417—13 **11 Claims**

A control system for a pump installation comprising a primary feed back circuit including sensors measuring the fluid discharge pressure of the pump and possibly additionally the fluid flow in the pump discharge and regulating the speed of the pump drive to control said discharge pressure in dependence for example on the pressure requirements of boiler feed, and including additionally a secondary feed back circuit sensing further operating conditions in the pump installation e.g. water and oil pressures. The primary circuit delivers a



speed control signal for actuation of control valve means of the pump drive which may be for example a steam turbine, and the secondary circuit is coupled to a gate of the primary circuit whereby in the event of any of the further conditions being unsatisfactory the control signal is interrupted and the pump stopped.

3,797,967

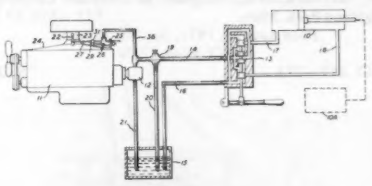
HYDRAULIC THROTTLE ACTUATOR

David Franklin Howeth, 1207 Elizabeth Blvd., Granbury, Tex.

Continuation-in-part of Ser. No. 105,411, Jan. 11, 1971, abandoned. This application May 10, 1972, Ser. No. 252,005

Int. Cl. F04b *49/10, 49/02*

U.S. Cl. 417—34 **5 Claims**



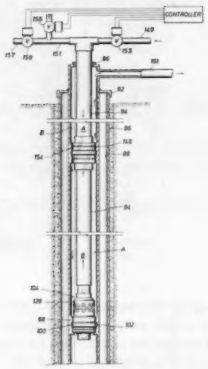
A throttle actuator for accelerating and decelerating the speed of an internal combustion engine in response to work demand where the engine drives the pump of a hydraulic system. In one aspect, the invention is directed to a throttle actuating piston and rod arrangement for operating the throttle of the engine and a pulsation intensifier for sensitively controlling the piston's movement. The pulsation intensifier is connected in a pressure line from the pump and comprises a free spring biased floating piston of configuration such that there is a differential in area across the piston for fluid pressure intensification purposes. The intensifier piston in one embodiment also has an axial passage therethrough and an orifice communicating with the throttle actuating piston. Both pistons are slidably mounted in housings which have springs to normally position the pistons in directions to cause the engine to return to idle speed when there is no work demand.

3,797,968

APPARATUS FOR FLOWING LIQUID FROM A WELL

Johnnie A. Elfarr, Palestine, Tex., assignor to William George, Jr., Palestine, Tex., a part interest

Filed Feb. 22, 1972, Ser. No. 228,012
Int. Cl. F04f 1/02
U.S. Cl. 417—138 14 Claims



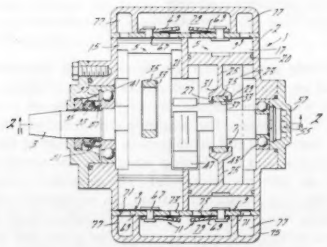
Apparatus for flowing fluid from wells such as oil wells and the like, utilizing gas displacement of fluid entering the well from an earth formation intersected by the well. Apparatus is utilized that enables the use of a simple downhole double check valve system that may be retrieved from the well for repair or replacement simply by removing the centermost conduit from the well thereby enabling the use of blowout proof safety mechanisms for such repair or replacement operations and eliminating the necessity of simultaneously removing all of the conduits or removing liquid filled tubing from the well.

3,797,969

REFRIGERANT COMPRESSOR

Herman R. Weatherhead, Dayton, Ohio, and William F. Gibson, Hayward, Wis., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 21, 1972, Ser. No. 282,639
Int. Cl. F04b 27/04
U.S. Cl. 417—273 9 Claims



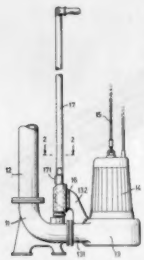
A compressor having two pairs of opposed pistons, the pistons of each pair being rigidly connected together for common reciprocable movement and yoke members connecting said pistons to a rotatable crankshaft.

3,797,970

ALIGNMENT MEANS FOR AN IMMERSIBLE PUMP

Albert Blum, Scheiderhohe, Siegkries, Germany

Filed June 8, 1971, Ser. No. 150,965
Int. Cl. F04b 17/00
U.S. Cl. 417—360 5 Claims



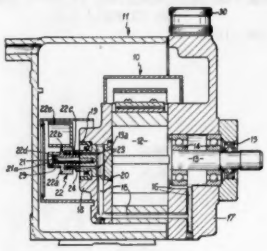
A guide means is provided for a pump such that the guide, affixed to a cylindrical guide pipe, engages a guide sleeve on a pump. The sleeve is so designed that the guide forces the pump into proper alignment with a delivery line.

3,797,971

ROTARY VACUUM PUMPS

Ian Watts, Bury, England, assignor to General Engineering Co. (Radcliffe) Limited, Radcliffe, Lancashire, England

Filed Apr. 13, 1972, Ser. No. 243,627
Claims priority, application Great Britain, Apr. 14, 1971, 9326/71
Int. Cl. F01c 21/04; F04c 29/02
U.S. Cl. 418—84 2 Claims



A rotary vacuum pump in which the pump shaft extends into a reservoir and is provided with a paddle element connected to a seal which can be located into and out of sealing contact with an oil feed passageway in the pump shaft to allow or prevent the passage of oil from the reservoir to the pump.

3,797,972

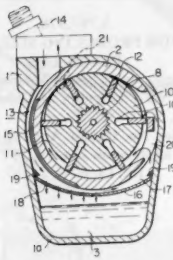
ROTARY VANE-TYPE GAS-COMPRESSOR

Shozo Nakayama; Masayuki Kurahashi, and Mitsuhiro Hattori, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken, Japan.

Filed Apr. 2, 1971, Ser. No. 130,716
Claims priority, application Japan, Apr. 7, 1970, 45-29685
Int. Cl. F01c 21/04; F04c 29/02
U.S. Cl. 418—85 5 Claims

In a rotary vane-type gas compressor having an outer casing and a stator provided with a rotatable round rotor, a chamber for cooling the stator is formed between the compression side

peripheral wall of the stator and the outer casing, a baffle plate is disposed below the stator so as to form a part of the gas passage. The inlet aperture of the casing and the suction port



of the cylinder are connected by way of the cooling chamber and the gas passage below the stator. The baffle plate separates oil particles from the gas flow.

3,797,973

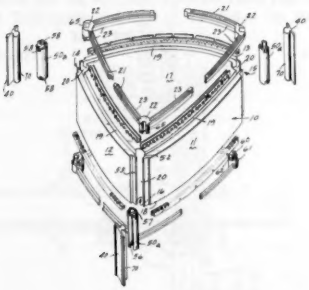
SLIPPER TYPE APEX SEAL FOR ROTARY PISTON ENGINE

Herbert F. Prasse, Town and Country; Harold E. McCormick, Ballwin, and William F. Ott, St. Louis, all of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Oct. 1, 1971, Ser. No. 185,582

Int. Cl. F01c *19/04*

U.S. Cl. 418—118 **10 Claims**



A T-shaped apex seal for rotary piston engines, the upright of the T being pivotally mountable in an apex seal groove of the multilobed rotor and the cross bar of the T having trochoid rotor chamber surface engaging raised sealing ribs lengthwise thereof and spaced a substantial distance to either side of the center line of the upright, with the rib at the leading side of the cross bar being spaced a greater distance from the center line than the rib at the trailing side of the cross bar. Grooves are provided alongside the apex seal groove to receive the side portions of the cross bar as it tilts relative to the seal groove in the pivotal movements of the apex seal as it follows the rotor chamber surface in the rotation of the rotor.

3,797,974

PACKING STRIP ARRANGEMENT FOR ROTARY PISTON ENGINES

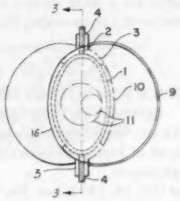
Franz Huf, Konstanz, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed June 20, 1972, Ser. No. 264,486

Claims priority, application Germany, June 30, 1971, 2132521

Int. Cl. F01c *19/02*; **F04c** *15/00, 27/00*

U.S. Cl. 418—129 **11 Claims**



This invention relates to a packing strip arrangement for sealing the working chambers of rotary piston engines of trochoidal construction having a trochoidal piston rotor, a housing boundary shaped according to the coordinated outer envelope curve, and contracted portions with radial packing strips at said contracted portions, which comprises

sealing ring means in each of the lateral housing walls within the inner envelope curve described by the edge of the piston rotor, said sealing ring means being closed within themselves,

sealing element means starting from said sealing ring means, extending radially in the direction to the contracted points, and directly adjoining the radial packing strips at the outer ends thereof,

and curved transition element means which rest against said sealing ring means and guide said sealing element means in the radial direction.

3,797,975

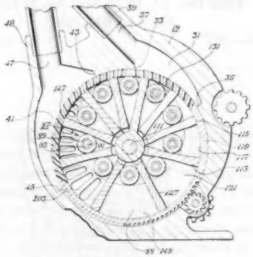
ROTOR VANE MOTOR DEVICE

Leonard J. Keller, Sarasota, Fla., assignor to The Keller Corporation, Sarasota, Fla.

Filed Feb. 18, 1972, Ser. No. 227,393

Int. Cl. F01c *1/00, 19/00*; **F04c** *27/00*

U.S. Cl. 418—137 **9 Claims**



An eccentric rotor, concentric vane motor device characterized by one or more of the following improvements: (1) an improved seal structure for sealing between the vanes and rotor vane guides as they rotate and interdigitate the vanes within a main chamber; (2) an adjustable inlet aperture on a torque control sleeve to eliminate a throttle and its associated loss in efficiency; (3) adjustable exhaust apertures in an exhaust control to reduce losses from over- or under-expansion

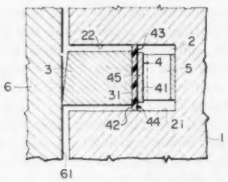
of a working fluid flowing through the motor; (4) a combination of the adjustable inlet aperture and the adjustable exhaust apertures to enable optimum efficiency, including the supercharging capability, over a wide range of power and speed requirements; and (5) a vane tip seal intermediate the vane and the interior cylindrical surface of a main chamber within which the vanes rotate. The motor device is employed in a system, including a reversing valve arrangement, for reversing the direction of rotation of the motor; and has within it means for reversibly positioning the adjustable inlet apertures and the adjustable exhaust apertures. Also disclosed are specific embodiments useful for a wide variety of working fluids, regardless of whether or not the working fluids are recirculated.

3,797,976

OIL SEAL DEVICE FOR ROTARY PISTON INTERNAL COMBUSTION ENGINE

Sakai Moriya, Urawa; Shoji Suzuki, Tokyo, and Noriyuki Kurio, Hiroshima, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1972, Ser. No. 298,174
Claims priority, application Japan, Oct. 21, 1971, 46-96768
Int. Cl. F01c *19/12*
U.S. Cl. 418—142 **8 Claims**



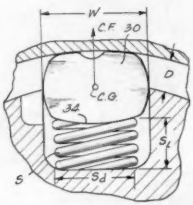
An oil seal device of a rotary piston internal combustion engine whose rotor is formed with one or more oil seal grooves, has a spring disposed within the bottom of the oil seal groove of the rotor and has an intermediate ring provided with a seal element formed of rubber or synthetic resin at least on the inner and outer periphery thereof, disposed between the rear surface of an oil seal body and the spring.

3,797,977

SLIPPER-TYPE PUMPING ELEMENT FOR A PUMP OR MOTOR

Robert E. Carlson, Livonia, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 13, 1972, Ser. No. 314,861
Int. Cl. F01c *1/00*
U.S. Cl. 418—267 **7 Claims**



A slipper vane sealed pump is proportioned in critical relationships between the pumping vane and the cam bore:

1. width to contact depth aspect ratio of 2.6 to 2.8;
2. circumferential contact arc to contact depth ratio of 1.4 to 1.9;
3. underslipper surface curvature within a range of 2½ to 5 percent of spring radius; and
4. a spring ratio of 1.55/1;

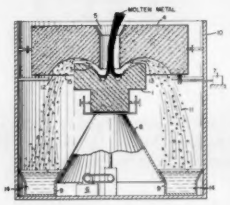
to afford improved noise and high speed durability characteristics.

3,797,978

APPARATUS FOR PRODUCING SIZED FERROALLOY PARTICLES

Claude Frank Young, and Charles Martin Offenhauer, both of Niagara Falls, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 28,594, April 15, 1970, Pat. No. 3,660,544. This application Jan. 19, 1972, Ser. No. 219,099
Int. Cl. B29c *23/00*
U.S. Cl. 425—8 **6 Claims**



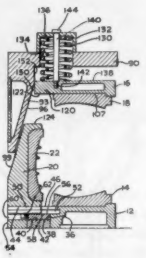
A process and apparatus for disintegrating a stream of molten ferroalloy into solidified spheroidal to spherical configurations for use as additives in metal producing furnace operations or the like.

3,797,979

SEGMENTED TIRE MOLD APPARATUS

Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 148,670, June 1, 1971, abandoned. This application Mar. 14, 1972, Ser. No. 234,566
Int. Cl. B29h *5/02*
U.S. Cl. 425—47 **25 Claims**



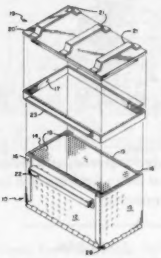
Apparatus for molding tires providing means for actuating a segmented mold having two annular sidewall molds and a plurality of tread mold segments readily installed, removed, and interchanged therein. The segments are moved radially inwardly by a closing mechanism associated with or attached to a first part of the apparatus which carries one sidewall mold and a second mechanism, independent of the closing mechanism, for moving the respective tread molding segments to be moved further outwardly while permitting the segments to be moved further outwardly without limit. The latter mechanism is illustrated by a cam ring mounted for partial rotation or oscillation about the mold axis and which has a plurality of cam ramps which engage cam followers mounted respectively on the tread mold segments and disposed outwardly of the cam ring.

3,797,980

CHEESE MOLD WITH HINGED SIDE WALLS

Burnell E. Budahn, Norwood, Minn.

Filed Jan. 21, 1972, Ser. No. 219,777
Int. Cl. A01j 25/13
U.S. Cl. 425—84 7 Claims



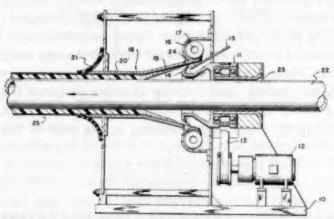
A cheese mold is provided having side and end walls pivotally joined to a bottom member with a pressing member providing closure of the mold. The bottom, pressing member, side and end walls each have plate members with raised projections on their inner facing surfaces that space a flat inner perforated member from each of the plates, thereby facilitating drainage of whey from the cheese. A construction which provides for stable stacking of molds is achieved.

3,797,981

APPARATUS FOR CONTINUOUSLY PRODUCING TUBULAR FOAMED POLYURETHANE INSULATION

Jan C. Van Dijk, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 815,129, April 10, 1969, Pat. No. 3,733,382. This application Oct. 25, 1972, Ser. No. 300,695
Int. Cl. B29d 27/00
U.S. Cl. 425—110 3 Claims



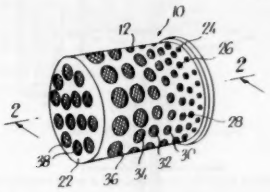
Apparatus for continuously producing tubular foamed polyurethane insulation in which a liquid foamable polyurethane composition is supplied to a rotary ring dispenser which centrifugally sprays the liquid onto a flexible sleeve positioned around and spaced from a pipe. The sleeve and dispensed liquid are moved axially relative to the dispenser and the outer surface of the sleeve is supported while the liquid foams and expands radially to fill the space between the pipe and the sleeve.

3,797,982

EXTRUDER OUTPUT MULTIPLIER

Giuseppe Borrello, Anzio, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,146
Claims priority, application Italy, May 26, 1971, 50589/71
Int. Cl. B29f 3/00
U.S. Cl. 425—198 6 Claims



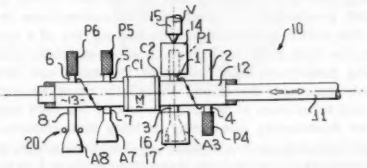
A cylindrical extrusion head having a series of varied size, multiple outlet orifices is used to multiply the output of an extruder.

3,797,983

APPARATUS FOR INJECTION BLOW MOLDING PLASTIC ARTICLES

Edmund H. Merz, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,334
Int. Cl. B29c 17/07
U.S. Cl. 425—242 B 10 Claims



This disclosure relates to apparatus for molding plastic articles, such as bottles or jugs, by forming a plurality of parisons, expanding the parisons, and between the forming and expanding steps reciprocating and rotating at least one of the parisons to cool it during movement between forming and expanding stations at a rate which will maintain optimum overall cycle time whereby the degree of orientation retained in the blown article is greater than heretofore provided because of the extra cooling time involved. Preferably the apparatus includes a pair of supporting members, cores or blow sticks carried by the supporting members upon which the parisons are injected, and means for separately rotating each of the core supporting members to present each parison to a blow station with the pair of core supporting members being additionally reciprocated in a selective fashion to maintain optimum parison cooling and overall machine cycle time.

3,797,984

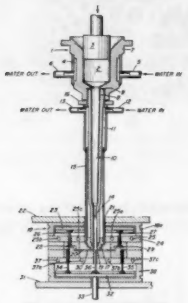
COLD SPRUE INJECTION MOLDING DEVICE WITH INTEGRAL SPRUE CHAMBER AND INJECTION NOZZLE

John Gerald Yago, 2325 Belvedere Dr., Toledo, Ohio; Robert George Haas, 13483 Five Point Rd., Perrysburg, Ohio, and George Bruckner Rheinfrank, 228 E. Front St., Perrysburg, Ohio

Continuation-in-part of Ser. No. 63,564, Aug. 13, 1970, abandoned. This application July 25, 1972, Ser. No. 274,934

Int. Cl. B29g *3/00*

U.S. Cl. 425—243 **1 Claim**



There is provided a cold sprue injection molding device with a sprue chamber integral with the nozzle, together with suitable temperature controlling means, such as a liquid jacket, to maintain temperature in the sprue chamber sufficiently low so that with a thermosetting resin, the resin does not cure before injection at the parting line of a two-part split mold. Specifically, the device comprises a ram-type injection feeder means and means for maintaining a predetermined temperature in said feed means, said device being in contact with a split mold with means for maintaining molding temperatures therein. More specifically, the device comprises a plasticizing and sprue chamber and an injection nozzle as a single unit positioned to direct molding composition feed through the nozzle terminating at the parting line of a sprue chamber-free split mold, said sprue chamber-injection nozzle unit being positioned independent of the mold and being detachably removable therefrom, wherein the tip of the nozzle of said unit terminates at the parting line of the split mold; means for maintaining non-curing molding temperatures in said plasticizing and sprue chamber-injection nozzle unit, said means extending to a point from about one-eighth inch to one-half inch from the nozzle tip; and a split mold in which one of the two sections thereof contains partially positioned therein the said detachably removable sprue chamber-injection nozzle unit, said mold having means therein for maintaining curing temperatures for the molding composition.

3,797,985

EXCESS PARISON REMOVER

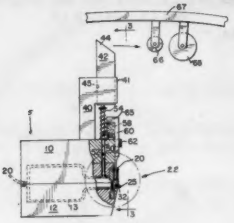
Edward B. Garver, Merrionette Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,029

Int. Cl. B29d *23/03*

U.S. Cl. 425—305 B **8 Claims**

Apparatus for use in combination with an extrusion blow mold process for disposing of excess extruded tubular material not utilized within the mold. Such apparatus includes metallic means carried by the mold halves for grasping and cooling the free end of such extruded material, and means for controllably releasing such material at an appropriate location within the cycle of the molding apparatus.



3,797,986

DEVICE FOR HOT PRESSING OF CERAMIC MATERIALS

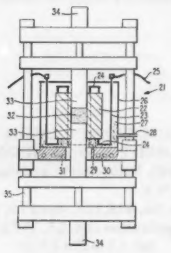
Harald Onder, Wetzikon, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Oct. 4, 1972, Ser. No. 294,830

Claims priority, application Switzerland, Oct. 7, 1971, 14623/71

Int. Cl. B28b *3/08*

U.S. Cl. 425—352 **4 Claims**



A device for hot pressing of ceramic materials in powder form or fine granular form, comprising a mold defining a longitudinal cavity and built up of graphite plates arranged in succession along its length each plate lying perpendicular to the wall of the mold cavity, at least one layer between each plate and the next, these layers being resistant to high temperature, electrically ensulating, and ceasing at some distance from the wall of the mold cavity, and electrically conducting carbon material filling the slots thus resulting in the wall of the mold cavity.

3,797,987

COEXTRUSION APPARATUS FOR FLAT FILM

George J. Marion, 691 E. Boot Rd., West Chester, Pa.

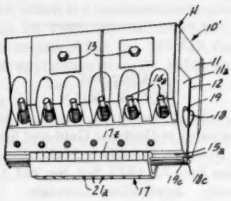
Continuation-in-part of Ser. No. 861,047, Sept. 25, 1969. This application Feb. 4, 1972, Ser. No. 223,436

Int. Cl. A01j *21/00*

U.S. Cl. 425—463 **24 Claims**

A dual outlet coextrusion flat film die assembly for various thermo-extrudable materials includes split manifold chambers separated from each other by a rigid plate that can include heat insulating means to prevent heat transfer between the manifolds. Each manifold is tapered toward its own die mouth; has separate melt inlets adapted for center, top or end feed operations; has separate pre-land and final land surfaces lead-

ing to individual outlet openings for precise control of melt flow; and has separate heat control means allowing precise temperature control for each melt as it flows throughout the die. Temperature differentials ranging from 0° to 200° F. are obtainable between the extruded layers. A differential push-



pull adjustment system for a movable lip of each outlet opening includes opposed alternatingly staggered thimble bolts for precise control of each individual layer profile. Methods of laminating the extruded layers to each other as well as to other substrates are included.

3,797,988

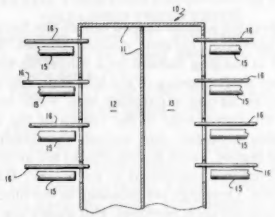
BOILER BURNER BALANCING COUNTER CONTROL SYSTEM

Cecil W. Davidson, P.O. Box 373, Anna, Tex.

Continuation-in-part of Ser. No. 170,854, Aug. 11, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,644

Int. Cl. F23n *5/00*

U.S. Cl. 431—12 **11 Claims**



The number of burners in operation in each of a plurality of banks of burners that are used for heating a furnace boiler are electronically counted by sensors monitoring the combustion regions of the burners and corresponding transistor circuits the combined output of which converts the voltage of common circuits corresponding to each bank, depending upon the total number of burners actually in operation in each bank; applying the corresponding voltage outputs of the common circuits by way of an adder/subtractor amplifier to selectively programmed electronic voltage comparators, and utilizing the outputs thereof with heat load-demand requirement signals as input logic to AND-gates for continuously controlling the number of burners in operation, as well as keeping them balanced, by automatically opening and/or closing a preselected number of fuel supply valves to the burners depending on the programming of the comparators, to maintain the number of burners in operation in the banks equal.

3,797,989

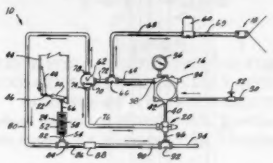
BURNER CONTROL SYSTEM

Merrill K. Gordon, Winfield, Kans., assignor to Peabody Gordon-Piatt, Inc., Winfield, Kans.

Filed Nov. 20, 1972, Ser. No. 308,182

Int. Cl. F23n *3/00*

U.S. Cl. 431—90 **9 Claims**



A burner control for a system having fluid burner, a pump, a nozzle, an air control louver with a fluid operator and a fluid bypass. A main valve connects the pump and the nozzle. A second valve connects the pump, the main valve, the louver operator and the fluid bypass, and additionally the louver operator connects with the fluid bypass. The control in operation controls the operator of an air louver apparatus and fluid flow through the nozzle and the bypass in a low fire condition and a high fire condition.

3,797,990

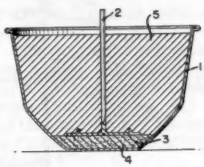
CANDLE

Jack M. Ogers, Fairlawn, N.J.; Charles Porter, Monroe, and Ronald A. Matesevac, Tuxedo, both of N.Y., assignors to Avon Products, Suffern, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,801

Int. Cl. F23d *3/16*

U.S. Cl. 431—291 **10 Claims**



A candle comprising a container having therein a candle wax layer, a wick extending through said candle wax layer and above the upper surface thereof, and a safety wax capable of melting at the temperature generated by the wick but nonflammable at such temperatures; in the molten state said safety wax having a specific gravity greater than that of the candle wax.

3,797,991

FLARE BURNER

John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.

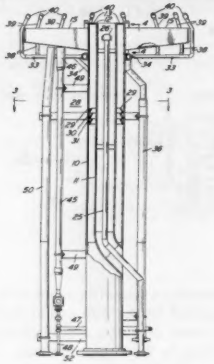
Filed Jan. 8, 1973, Ser. No. 321,941

Int. Cl. F23b *5/00*

U.S. Cl. 431—202 **10 Claims**

A flare burner for waste combustible gases from oil refineries and the like is disclosed which includes a stack for the gases with central air duct and steam pipe, the stack having outwardly extending vanes with gas delivery slots, the tops of the vanes being angularly disposed in a plane with respect to radial lines through the center of the stack for a swirling action

of the burning gas. The stack has a closure plate with flame retention openings. An interior back flow preventing diode can be employed and also an optional steam ring with steam



delivery pipes along the vanes and with angularly disposed tips to enhance the swirling action of the burning gas. Ignitors and pilots are shown.

3,797,992

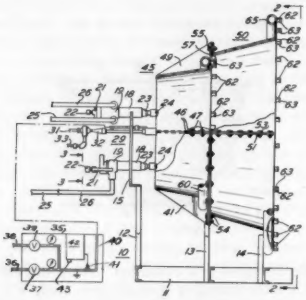
CRUDE OIL BURNER

John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.

Filed Dec. 15, 1972, Ser. No. 315,339

Int. Cl. F23q *9/00*

U.S. Cl. 431—285 **8 Claims**



A crude oil burner is provided particularly suited for offshore oil well testing,having a plurality of aligned and spaced air cones to the rear end of which crude oil is delivered, and into which air is induced. Air is also available at the space between the cones and at the front of the front cone. Water is sprayed into the flame from a ring at the rear of the front cone and beyond the front of the front cone from a ring at the front of the front cone to provide smokeless combustion.

3,797,993

TUNNEL KILN

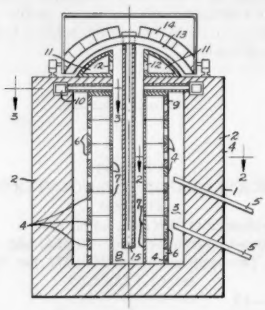
Kurt Heldt, Kronberg, and Hans Lappe, Frankfurt, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed June 22, 1972, Ser. No. 265,304

Claims priority, application Germany, July 7, 1971, 2133762

Int. Cl. F27b *5/14, 9/00*

U.S. Cl. 432—212 **8 Claims**



There is provided a flame heated tunnel kiln for the firing or sintering of elongated ceramic molded articles. The articles are arranged in hanging fashion on a moveable arched cover over the upper shaft opening of the kiln. The kiln comprises a tunnel chamber having separating side walls opening outwardly into the flame zone in the region of the firing zone. There are also provided thin walled, fire resistant hollow blocks in said region. These hollow blocks are arranged so that they prevent relative movement to each other transversly of the furnace axis. Openings are provided in the blocks, burners are directed toward such openings. Hot gasses are removed in a composition below a cool air flow channel which is bounded by the upper tunnel chamber and opens thereto and a gap is provided for the inflow of outer air between the arched cover and the outer contour of the cool air flow channel.

CHEMICAL

3,797,994

HAIR COLORING COMPOSITIONS CONTAINING ORGANIC ACID ANHYDRIDE-DYE POLYMERS

Gregoire Kalopissis, Paris, France, assignor to Societe anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 576,839, Sept. 2, 1966, Pat. No. 3,617,165, which is a continuation-in-part of Ser. No. 523,525, Jan. 28, 1966, Pat. No. 3,619,101, which is a continuation-in-part of Ser. No. 227,542, Oct. 1, 1962, abandoned. This application Mar. 19, 1971, Ser. No. 126,349

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.1 **7 Claims**

This invention relates to hair dye compositions which comprise a solution of a colored polymer in a solvent selected from the group consisting of water, alcohol and their mixtures.

3,797,995

POLYESTER TEXTILE FIBERS DYED WITH ALPHA-AMINOANTHRAQUINONE DYES

Edgar E. Renfrew, and Raouf Botros, both of Lock Haven, Pa., assignors to American Aniline Products, Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 80,172, Oct. 12, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 294,161

Int. Cl. D06p *3/52*; **C09b** *1/28*

U.S. Cl. 8—39 **8 Claims**

Anthraquinone dyes are made by the reaction of anthraquinone intermediates, substituted in each of the alpha positions with a hydroxyl group or an amino group and containing at least one α-amino group, with an aralkyl alcohol, such as benzyl alcohol, in sulfuric acid medium preceded by or followed by halogenation. Synthetic textile fibers, in particular, polyethylene terephthalate fibers, when dyed with the new dyes are colored in blue shades which are substantive, light fast, sublimation resistant and retain their shade well when viewed under different light sources.

3,797,996

PROCESS FOR TREATING FABRICS AND FABRICS OBTAINED THEREFROM

Razmic S. Gregorian, Aiken, S.C., and Hans R. Hoernle, Augusta, Ga., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,456

Int. Cl. D06m *15/20*

U.S. Cl. 8—114.5 **4 Claims**

The process for producing unusual effects in a three-component fabric having a facing component having upstanding fibers, a backing component and a water-insoluble interlayer component securing the facing component to the backing wherein the entire facing component, the entire backing component, or both the entire facing and backing components are subjected to chemically promoted shrinkage. Laminates obtained are described.

3,797,997

METHOD FOR FIXING THE SHAPE OF TEXTILE MATERIALS

Henry Douglas Feldtman, Point Lonsdale, and Barry Edwin Fleischfresser, Belmont, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Melbourne, Victoria, Australia

Filed Oct. 26, 1970, Ser. No. 84,251

Claims priority, application Australia, Nov. 6, 1969, 63436/69; May 14, 1970, 1207/70

Int. Cl. D06m *3/10*, *3/06*, *15/16*

U.S. Cl. 8—127.6 **6 Claims**

Textile materials consisting of or containing wool or other keratinous fibres are maintained, without external restraint, in a cohesively set configuration by depositing on the materials a substance that renders the materials resistant to loss of cohesive set during subsequent treatments to establish permanent set in the material.

3,797,998

METHOD FOR AFFECTING A CONDITION OF A BOUNDARY LAYER OF GAS OR VAPOUR AT A SURFACE OF A BODY OF LIQUID

Hector Roland Bourne, 8 Wellesley Rd., Hawthorn, and Bruce Cameron Brown, 84 Marianne Way, Victoria, both of Australia

Filed July 7, 1971, Ser. No. 160,482

Claims priority, application Australia, July 7, 1970, 1751/70

Int. Cl. B01j *1/18*

U.S. Cl. 21—60.5 R **8 Claims**

A method of reducing evaporation from a water storage by use of a meshwork such as a plastics net which may be laid over the water or on the surface thereof. In the preferred method, the net is laid on the surface and a barrier layer of an oily or other film-forming liquid is located in the meshes.

3,797,999

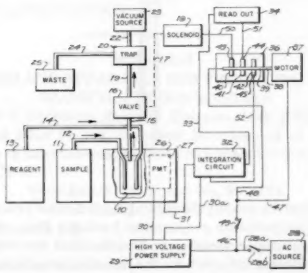
METHOD AND APPARATUS FOR INDICATING MICRO-ORGANIC MATTER BY MEANS OF CHEMILUMINESCENCE

Samuel Witz, Los Angeles, and Rudolph H. Moyer, West Covina, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed May 20, 1970, Ser. No. 39,061

Int. Cl. G01n *33/00*, *33/04*, *33/16*

U.S. Cl. 23—230 R **13 Claims**



The presence and relative quantity of porphyrin-containing micro-organic matter such as bacteria, tissue cells and the like

are indicated by drawing material from a container of the porphyrin-containing sample under test and also from a container of a reagent simultaneously into and through a reactor cell, by means of a vacuum source. The reagent is of a character, such as a mixture of luminol and hydrogen peroxide, which upon contact with the micro-organic matter produces chemiluminescence. A photomultiplier tube housed in proximity to the reactor cell senses the chemiluminescence and produces an electrical output which is suitably amplified and integrated and read on a read-out device such as a voltmeter.

3,798,000

AGENT AND METHOD FOR DETERMINATION OF CALCIUM

Roland Helger, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Aug. 14, 1972, Ser. No. 280,174

Claims priority, application Germany, Sept. 3, 1971, 2144136

Int. Cl. C09k *3/00*; **G01n** *31/00, 33/00*

U.S. Cl. 23—230 R **7 Claims**

An agent for the colorimetric determination of calcium, containing a color reagent, which forms complexes in the presence of calcium ions, and a buffer system which consists essentially of a mixture of amidosulfonic acid, disodium tetraborate and alkali carbonate.

3,798,001

APPARATUS AND METHOD FOR DISCERNING AN INDICATOR REACTION POINT

Peter Naumann, Stockelsdorf, and Hans Moller, Lubeck, both of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Maislinger Allee, Germany

Filed Mar. 29, 1972, Ser. No. 239,233

Claims priority, application Germany, May 7, 1971, 2122586

Int. Cl. G01n *21/06*

U.S. Cl. 23—232 R **6 Claims**

A method for readily discerning an indicator reaction point between an indicator preparation having a first color and a reaction substance which is to be identified and which has a second different color where the reaction is such that there is a third color formed in a transition between the first two colors comprises passing the substance to be identified through a transparent vessel having an indicator preparation therein, and observing the separating line between the first and second colors by viewing through the third color so as to obscure the third color. A device which may be used for such testing comprises, for example, a test tube having a transparent wall of a color comparable to the color of transition between the first and second colors so that when viewing through the test tube, the transition color is obscured and the separation between the first and second color becomes clear. The tube may be formed with the wall of the third color or a transparent foil of the third color may be wrapped around the exterior surface thereof.

3,798,002

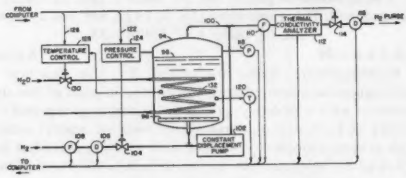
COMPUTER CONTROL SYSTEM FOR REFINING AND HYDROGENATION OF UNSATURATED HYDROCARBONS

Richard E. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 885,405, Dec. 16, 1969, Pat. No. 3,653,842. This application Dec. 14, 1971, Ser. No. 208,008

Int. Cl. B01j *1/00*; **C07c** *3/12*; **G01n** *27/00*

U.S. Cl. 23—253 A **4 Claims**



Described is a control system for a refining hydrogenation and deodorizing plant for edible oils and the like wherein various system variables are converted into signals which are fed to a computer which controls the system to optimize performance and reduce oil losses.

3,798,003

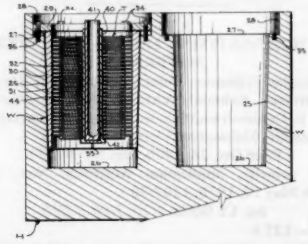
DIFFERENTIAL MICROCALORIMETER

E. Keith Ensley, Sherman Hill Estates, Laramie, Wyo., and Henry A. Scholz, Rt. 8, Box 310, Silver City, N. Mex.

Filed Feb. 14, 1972, Ser. No. 225,718

Int. Cl. G01k *17/00*; **G01n** *25/20*

U.S. Cl. 23—253 R **8 Claims**



A differential microcalorimeter having a pair of cylindrical thermopiles with a tubular test cell, axially carried within each

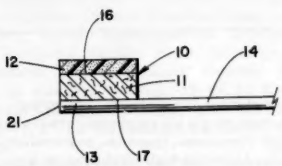
thermopile. Each thermopile is fitted into an internally cylindrical, externally tapered, longitudinally segmented sleeve. The sleeve is fitted into a tapered well in a heat sink. Pressure against the sleeve to thrust it into the well reduces its diameter to more effectively grip the thermopile. The thermopile is a laminated arrangement of spacers and disk-shaped thermocouple members. Each spacer includes an inner ring gripping the core, an outer ring gripped by the wall of the sleeve and an intermediate insulator washer. Each thermocouple member consists of a disk-shaped insulator about which thermocouple wires are wrapped with the inner edge of the wires being supported upon the inner rings of the spacers and the outer edges supported upon the outer rings thereof. To effectively transmit heat from the core to the inner spacer rings through the wires to the outer spacer rings and to the heat sink, the inner spacer rings are slotted and tightly grip the core of the thermopile. The outer spacer rings are also slotted, and each outer spacer ring is thereby tightly gripped by the sleeve when the sleeve is reduced in diameter regardless of the possibility of variations in the outside diameter of the outer spacer rings. The spacer rings are anodized to insulate them from the thermocouple wires which rest against them.

3,798,004

TEST DEVICE

Avraham Zerachia; Natan Friedgut, and Gary Steinman, all of Jerusalem, Israel, assignors to Ames-Yissum, Ltd., Givat Shaul, Jerusalem, Israel

Filed Apr. 18, 1972, Ser. No. 245,242
Int. Cl. G01n *21/06, 21/20*
U.S. Cl. 23—253 TP **7 Claims**



An improved dip and read type test device having a flat bibulous matrix having an indicator incorporated therewith, the matrix being disposed between and attached to a pair of liquid impervious members and having exposed peripheral edge portions such that upon immersion into a solution containing material to which said indicator is responsive, flow of said solution into said matrix through said edge portions causes formation of measurable visible indicia pattern on the matrix.

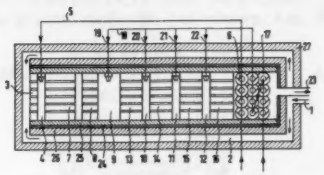
3,798,005

APPARATUS FOR OBTAINING HYDROGEN

Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Erlanger & Berlin, Germany

Filed Dec. 15, 1970, Ser. No. 98,264
Claims priority, application Germany, Dec. 24, 1969, 1964810
Int. Cl. B01j *9/04*; C01b *2/10*
U.S. Cl. 23—288 R **9 Claims**

A hydrocarbon and air mixture or a hydrocarbon and oxygen mixture is incompletely catalytically burned, in a highly porous sinter block or stone containing nickel or platinum. The block is provided with passage openings. The thus obtained gas mixture which consists, mainly of CO and H_2 is brought by means of at least one quenching with H_2O down to temperatures of 500° to 150°C and subsequently reacted with the formed water vapor in sinter blocks which are highly



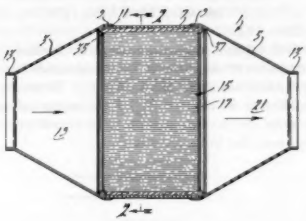
porous, contain conversion catalysts and are provided with preferably parallel passage openings.

3,798,006

CATALYTIC CONVERTER FOR EXHUAST GASES

Robert N. Balluff, Rives Junction, Mich., assignor to Tenneco, Inc., Racine, Wis.

Filed Dec. 14, 1971, Ser. No. 207,793
Int. Cl. F01n *3/14*; B01j *9/04*
U.S. Cl. 23—288 F **17 Claims**



A catalytic converter adapted for use in the exhuast systems of internal combustion engines comprises a housing including as a part thereof a tubular shell having a differentially hardened fibrous lining to resiliently support, insulate, and secure a monolithic type catalyst element. The ends of the tubular shell and the fibrous lining are angularly deformed inwardly to protect the corners of the catalyst, to minimize gas impingement on the fibrous material, and to mechanically retain the catalyst in position.

3,798,007

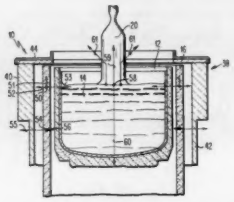
METHOD AND APPARATUS FOR PRODUCING LARGE DIAMETER MONOCRYSTALS

Raymond A. Bochman; Ralph G. Dessauer, both of Poughkeepsie, and Dian P. Jen, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,571
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **17 Claims**

An improved method and apparatus for producing large diameter semiconductor crystals by the Czochralski process wherein a relatively flat temperature profile is maintained within the melt by adding heat to the sides and top of the melt while simultaneously removing heat from the melt through the crystal being pulled and the lower portion of the melt. In the apparatus, the temperature profile is maintained with a deflector to direct heat energy to the top surface of the melt about

the crystal being pulled, a heat exchange element to facilitate removal of heat through the crystal being pulled, and means to



remove heat through the lower portion of the crucible containing the melt.

3,798,008

RETENTIVE TUNGSTEN BODY CONTAINING 20–50 PPM TITANIUM AND/OR ZIRCONIUM

Gyorgy Baktai; Sandor Saly; Benedek Orlik, and Jeno Neugebauer, all of Budapest, Hungary, assignors to Egyesult Izzolampa es Villamossagi Reszvenytarsasag, Budapest, Hungary

Filed Sept. 12, 1972, Ser. No. 288,289
Int. Cl. C22c *27/00, 1/04*
U.S. Cl. 29—182 **3 Claims**

Retentive (shape-retaining) tungsten bodies - e.g., coils - can be manufactured, if the tungsten contains besides the conventional additives /e.g., Si, K, Al etc./ Ti and/or Zr as additional additives in a quantity of the order of magnitude of 20–500 ppm. Such coils sustain their retentivity at high temperatures even for long periods.

3,798,009

HARD SINTERED COMPOSITION

Susumu Yamaya, Tokyo; Takeshi Sadahiro, Yokohama, both of Japan, assignors to Toshiba Tungaloy Co., Ltd., Isukagoshi, Kawasaki-shi, Japan

Filed Dec. 15, 1971, Ser. No. 208,064
Claims priority, application Japan, Oct. 1, 1971, 46-76313
Int. Cl. G22c *29/00*; **B22f** *3/12*
U.S. Cl. 29—182.7 **3 Claims**

The addition of up to 5 wt.% of zirconium carbide to hard sintered compositions of the titanium carbide type used in cutting tools for machining metals reduces cratering and plowing when machining metals at high speeds.

3,798,010

EXPLOSION BONDED ALUMINUM TO STEEL

William F. Sharp, Jr., Bellmawr, and Thomas F. Enright, Woodbury Heights, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 695,506, Jan. 3, 1968, abandoned, and is a division of Ser. No. 756,704, July 30, 1968, Pat. No. 3,583,062. This application Feb. 11, 1971, Ser. No. 114,662
Int. Cl. B23p *3/00*
U.S. Cl. 29—196.2 **4 Claims**

Composite products of certain aluminum and steel layers metallurgically bonded together over at least 90 percent of their interface by a substantially diffusionless wavy bond containing, by area, at least about 70 percent direct aluminum-to-steel bonding are prepared by an improved explosion-bonding process wherein at least one layer of aluminum is caused to

collide progressively with a layer of steel at a velocity of about from 2,500 to 3,400 meters/sec. and at an impact angle of about from 14° to 25°, the opposed surfaces of said layers being disposed at an angle of less than 5° prior to detonation of said explosive.

3,798,011

MULTILAYERED METAL COMPOSITE

William F. Sharp, Jr., Bellmawr, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 795,505, Jan. 31, 1969, abandoned. This application Jan. 26, 1970, Ser. No. 5,990
Int. Cl. B32b *15/00*
U.S. Cl. 29—197 **4 Claims**

Interlayers of malleable tantalum-, columbium-, aluminum-, or titanium-base metals are employed between layers of high-yield-strength aluminum-, titanium-, or zirconium-base metals and dissimilar layers of high-yield-strength-iron-, nickel-, or aluminum-base metals to provide metallurgically bonded metal composites having good shear strength and superior resistance to impact loading. The composites are useful, e.g., as transition joints, and are used to best advantage where gas-tight tubular transition joints are required. Transition joints composed of high-yield-strength titanium- or aluminum-base metals bonded to high-yield-strength stainless steel via an interlayer of tantalum- or columbium-base metal exhibit outstanding low-temperature properties, and composites of high-yield-strength zirconium-base metals bonded to such stainless steels via the same interlayers make superior transition joints for nuclear applications.

3,798,012

COMBUSTION PROCESS AND FUEL COMPOSITIONS

William Monroe Le Suer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 89,031, Nov. 12, 1970, abandoned, which is a continuation of Ser. No. 700,301, Jan. 24, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 474,479, July 23, 1965, abandoned, and Ser. No. 468,558, Sept. 10, 1965, abandoned, and Ser. No. 665,934, Sept. 6, 1967, abandoned, which is a continuation of Ser. No. 394,337, Sept. 3, 1934, abandoned. This application June 9, 1971, Ser. No. 151,538
Int. Cl. C10l *1/18, 1/30, 1/32*
U.S. Cl. 44—51 **22 Claims**

The invention disclosed herein is directed to an improved combustion process whereby the fuel is efficiently utilized and

the formation of undesirable exhaust smoke is reduced. The combustion process comprises the burning of a fuel in which there is incorporated a small amount of metal salts having a particle size less than about 800 microns. The invention relates further to improved fuel compositions containing such metal salts.

3,798,013

DOUBLE ION EXCHANGE METHOD FOR STRENGTHENING GLASS ARTICLES

Touru Inoue, Nishnomiya; Nobuyoshi Ohsato, Itami, and Jun Hasegawa, Takarazuka, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 24, 1972, Ser. No. 246,815

Claims priority, application Japan, Apr. 26, 1971, 46-27811

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **4 Claims**

A process for increasing the strength of a glass article by subjecting a glass article containing alkali metal ion A to a treatment of exchanging the ion A with an alkali metal ion B having a larger ion radius than the ion A, wherein the exchanging treatment is performed in two successive stages, and the second-stage exchanging treatment is carried out under milder treating conditions using a treating salt having a larger ion B content than in the first-stage treatment.

3,798,014

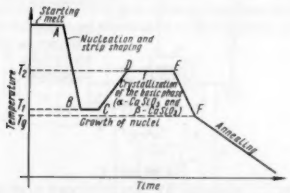
METHOD OF MANUFACTURING CRYSTALLINE GLASS ARTICLES

Konstantin Timofeevich Bondarev, ul. Yanvarskogo vosstania, 24-a, kv. 60, Kiev; Tamara Efimovna Golius, ul. Pushkinskaya, 291, kv. 6, Konstantinovka Donetskoi oblasti; Anatoly Gavrilovich Minakov, ul. Levanevskogo, 18, kv. 11, Konstantinovka Donetskoi oblasti; Vladimir Anatolievich Minakov, ul. Aleandra Nevskogo, 18, kv. 31, Konstantinovka Donetskoi oblasti, and Anatoly Vasilievich Strekalov, ul. Schmidta, 31, kv. 12, Konstantinovka Donetskoi oblasti, all of U.S.S.R.

Continuation-in-part of Ser. Nos. 703,272, Feb. 6, 1968, abandoned, and Ser. No. 703,543, Feb. 7, 1968, abandoned, and Ser. No. 717,453, March 29, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,101

Int. Cl. C03c *3/22*

U.S. Cl. 65—33 **2 Claims**



A method of making crystalline glass products, comprising: melting the batch mix to obtain a glass crystallizable about the microparticles of metal sulfides present therein, cooling the glass mass to a temperature of 670°–750°C with simultaneous shaping of the material, holding the material at said temperature, raising its temperature to 930°–970°C at a rate of 75°–320°C per hour, holding the material at that temperature, and its subsequently cooling at a controlled rate.

3,798,015

GLASS SHEET DRAWING METHOD AND APPARATUS

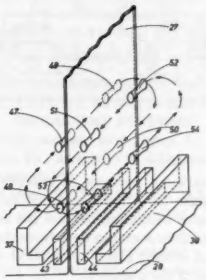
Claude Brichard, Moustier-sur-Sambre, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed July 14, 1972, Ser. No. 271,754

Claims priority, application Luxembourg, Aug. 20, 1971, 63755

Int. Cl. C03b *15/04*

U.S. Cl. 65—95 **42 Claims**



A method and apparatus for improving the quality of glass produced by drawing a ribbon of glass from a molten glass bath through a drawing chamber, by producing a flow of gas in the chamber and around the ribbon so as to cause the gas to repeatedly traverse at least one closed circuit extending through a region opposite at least one of the two outer thirds of the ribbon width.

3,798,016

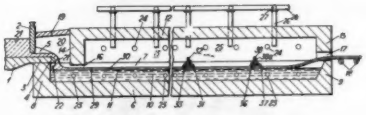
MANUFACTURE OF FLAT GLASS

Edward Russell Ormesher, 48 Heyes Ave., Rainford, Lancashire, and John Allan Yates, 21 White Rails Dr., Ormskirk, Lancashire, both of England

Continuation-in-part of Ser. No. 810,151, March 25, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,506

Int. Cl. C03b *18/02*; C03c *21/00*

U.S. Cl. 65—99 A **4 Claims**



Float glass having a predetermined characteristic is manufactured by maintaining a body of surface modifying molten material against the hot glass surface, and later cleansing the treated glass surface by wiping that surface with an ancillary body of molten material. The ancillary body of molten material is spaced downstream of the first body by a distance which locates the ancillary body beyond the region of condensation of vapor originating from the first body.

3,798,017

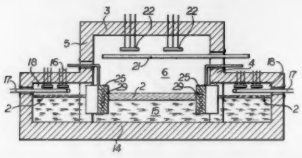
METHOD FOR USING MOLTEN METAL CHANNEL FOR THE CONVEYANCE OF LIQUID GLASS

Franz Classen, Kantatr, 36, 505 Ponz-Grengel, Germany

Division of Ser. No. 209,892, Dec. 20, 1971. This application June 8, 1972, Ser. No. 261,114

Int. Cl. C03b *18/02*

U.S. Cl. 65—99 A 4 Claims



The method disclosed pertains to making glass sheets by placing molten glass on a molten metal bath in a channel which communicates with chambers on the sides of the channel which allows molten metal to flow from the chambers. The temperature of the molten glass is regulated within adjustable blocks on the sides of the channel.

3,798,018

GLASS MANUFACTURE

Leo J. Paridon, Doylestown; Cloyde G. Dye, and Frank J. Yarsa, both of Barberton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 23, 1971, Ser. No. 211,658

Int. Cl. C03b *1/00*

U.S. Cl. 65—134 9 Claims

A process for preparing glass free of voids and imperfections is provided comprising charging an aqueous slurry of glass-forming metal hydroxide, and sand to a molten glass pool at a rate sufficient to minimize spattering, segregation of reactants and carry-off of alkali with the evolved steam, maintaining the temperature of the molten glass at or above the fusion temperature of the reactants for a time sufficient to effect reaction, and recovering the resulting glass.

3,798,019

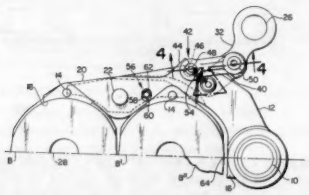
MOLD HOLDER ARM AND INSERT OPENING MECHANISM

Wasyl Bystrianyk, Simsbury; Andrew S. Federko, Bloomfield, and Albert J. Trahan, Vernon, all of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed May 22, 1972, Ser. No. 255,460

Int. Cl. C03b *9/40*

U.S. Cl. 65—360 12 Claims



A glassware forming machine has mold holder arms pivotally mounted on a common hinge pin, and a conventional rock shaft and crank opens and closes each of these arms through a short link pivotally connecting the arm to the crank. The angular displacements of these arms are limited by the geometry of a conventional glassware forming machine, and in order to blow larger size ware the present invention contemplates subjecting the split molds, which are pivotally carried on these arms, to a cocking motion as the arms are opened. An interconnecting link acts on the molds and operates off the crank. The interconnecting link operates when the mold holder arms are open, but does not interfere with the normal mold closing motion. An alternative configuration is shown for the blank mold side of an I. S. machine to increase the clearance for the neck ring arm during revert motion, and to allow longer parisons to be reverted.

3,798,020

PROCESS FOR INCORPORATING MICRONUTRIENTS IN LIQUID PHOSPHATIC FERTILIZERS

Thomas Moylan Parham, Jr., Colonial Heights, and James Earl Sansing, Jr., Chester, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 17, 1971, Ser. No. 154,170

Int. Cl. C05d *9/02*

U.S. Cl. 71—1 10 Claims

The sequestration of micronutrient metal ions in liquid phosphatic fertilizer solutions is facilitated by incorporating in the solutions a synergistic combination of citrate and polyphosphate salts.

3,798,021

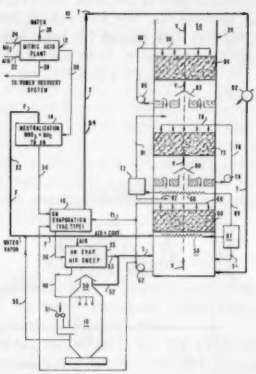
POLLUTION ELIMINATION FOR FERTILIZER PROCESS

Dellason F. Bress, Murray Hill, and Carmen A. Petrarca, Caldwell, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Aug. 21, 1972, Ser. No. 282,220

Int. Cl. C05c *9/00*; B01d *47/06*

U.S. Cl. 71—28 18 Claims



In a continuous process for the manufacture of fertilizer, waste heat from the process is passed in indirect heat exchange relation with a stream of air and water entrained fertilizer solids. In this manner, it is possible to remove substantially pure water and air together with the fertilizer containing solution which can be used in the manufacture of the fertilizer.

3,798,022

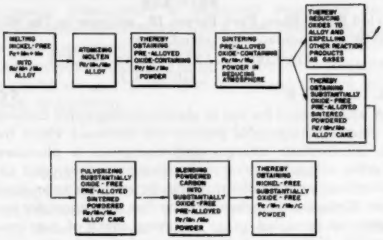
PRE-ALLOYED NICKEL-FREE SILICON-FREE MINIMAL OXIDE LOW ALLOY IRON POWDER

Gordon J. LeBrasse, Ann Arbor, and Boniface Stolarski, Grosse Pointe Woods, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 115,994, Feb. 17, 1971, Pat. No. 3,676,103. This application Mar. 20, 1972, Ser. No. 235,890

Int. Cl. B22f 9/00

U.S. Cl. 75—0.5 BA 2 Claims



A pre-alloyed nickel-free silicon-free low-alloy iron powder with minimal oxide content yet possessing good hardenability and good mechanical and metallurgical properties for the production of sintered powdered metal articles is prepared by alloying iron with approximately one-half of one per cent molybdenum and approximately one-half of one per cent of manganese. Any desired carbon content is obtained either by combining carbon with the molten alloy prior to atomization or by adding graphite thereafter to the pre-alloyed powder by blending prior to compacting. The detrimental oxides normally created during the production of these compactible metal powders by the high temperature atomization of the molten metal from which they are formed are reduced to negligible amounts having harmless effects by passing the pre-alloyed powder through a sintering furnace containing a reducing atmosphere, such as a hydrogen or dissociated ammonia gas atmosphere. The sintered powdered alloy cake thus produced is then pulverized to form the alloy powder of the present invention. Comparative tests described, and their results set forth herein, show that the present invention alloy powder, although omitting the nickel content previously thought necessary, nevertheless retains the functions of, and compares favorably in performance with the prior nickel-content iron alloy powders.

3,798,023

METHOD FOR PRODUCING TUNGSTEN WHISKERS

Chuji Tomita, 1507-Kamisuwa, Suwa-shi, Japan

Continuation-in-part of Ser. No. 37,996, May 18, 1970, abandoned. This application May 3, 1972, Ser. No. 249,973

Claims priority, application Japan, May 23, 1969, 44-39745; Sept. 11, 1969, 44-71636

Int. Cl. B22f 1/00

U.S. Cl. 75—.5 BB 7 Claims

Tungsten whiskers ranging in diameter from about 0.5 to 3 μ are produced by interdispersing tungsten oxide and a suitable catalyst in fine granular form and heating the interdispersion in a hydrogen atmosphere.

3,798,024

RECLAMATION OF ALUMINOUS SKIM

Alfred M. Murphy; Kenneth C. Hagerman, both of Richmond, and Nicholas A. Wagner, Chester, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed July 13, 1972, Ser. No. 271,411

Int. Cl. C22b 21/00

U.S. Cl. 75—68 R 9 Claims

Skim or dross material formed on a body of molten aluminum or aluminum alloy is treated to recover aluminous metal by removing the hot skim material to a preheated skim pot, introducing previously melted salt flux, stirring the flux and skim so as to admix them thoroughly, and recovering molten metal separated from the residual skim solids.

3,798,025

VACUUM DECARBURIZATION IN RH AND DH TYPE DEGASSING SYSTEMS

Sundaresan Ramachandran, and James C. Fulton, both of Natrona Heights, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1971, Ser. No. 213,528

Int. Cl. C21c 7/10, 5/28

U.S. Cl. 75—49 6 Claims

A method for cyclically decarburizing a bath of molten metal such as steel by transferring the molten metal from a first vessel to a second vessel, evacuating the space above the molten metal in the second vessel while subjecting the metal bath in the second vessel to oxygen to decarburize the same, and returning the decarburized metal from the second to the first vessel. The foregoing cycle is repeated while the pressure within the second vessel is progressively reduced and the oxygen introduced into the second vessel varied to decarburize the molten metal bath in steps without substantial oxidation of metal constituents therein.

3,798,026

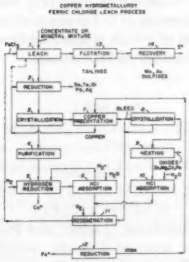
COPPER HYDROMETALLURGY

Edward Francis Godfrey Milner, Trail, British Columbia; Ernest Peters, Vancouver, British Columbia; Godefridus Maria Swinkels, Rossland, British Columbia, and Andrew Imre Vizsolyi, Vancouver, British Columbia, all of Canada, assignors to Cominco Ltd., Vancouver, British Columbia, Canada

Filed Mar. 27, 1972, Ser. No. 238,460

Int. Cl. C22b 3/00

U.S. Cl. 75—104 34 Claims



A cyclic method of recovering copper, iron and sulfur from iron and copper sulfide bearing materials is described. The method is self-sufficient with regard to iron and copper con-

sumption and gives almost quantitative yields of iron and copper. The method comprises:

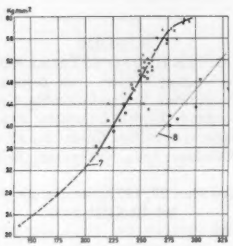
1. subjecting a copper bearing material to a leach with a hot ferric chloride containing lixiviant,
2. separating the reaction mixture thereby formed into a solids residue and a leach solution containing cuprous, cupric and ferrous chlorides,
3. adding metallic copper to said leach solution to thereby reduce cupric ions present to the cuprous state,
4. crystallizing out cuprous chloride formed in step (3) above,
5. treating the cuprous chloride with hydrogen to form elemental copper and hydrogen chloride gas, and,
6. treating the ferrours chloride with hydrochloric acid and oxygen to regenerate the ferric chloride containing lixiviant and to simultaneously precipitate ferric oxide.

The ferric chloride containing lixiviant is recycled to the leaching step. The ferric oxide is reduced to elemental iron.

3,798,027
GRAY IRON

Charles Defranco, Zele, and Jan Van Eeghem, Deurle, both of Belgium, assignors to Centre de Recherches Scientifiques et l'Industrie des Fabrications Metalliques, en abrege, C.R.I.F., Brussels, Belgium

Continuation of Ser. No. 797,622, Feb. 7, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,489
Claims priority, application Belgium, Feb. 13, 1968, 710679
Int. Cl. C22c *37/00*
U.S. Cl. 75—124 **12 Claims**



High strength low hardness gray iron consisting essentially of about 1 – 3 percent aluminum, 2 – 4 percent carbon, up to 1% silicon and the balance iron, said gray iron having been inoculated with a minimum of 0.3 percent of an inoculant alloy, the active inoculant of which is selected from the group consisting of calcium, barium and strontium.

3,798,028
ZINC-ALUMINUM ALLOYS WITH GOOD MACHINABILITY

Edouard Gervais, Montreal, Quebec, and Pierre Chollet, Pierrefonds, Quebec, both of Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Filed May 5, 1972, Ser. No. 250,557
Claims priority, application Canada, July 21, 1971, 118722
Int. Cl. C22c *1/00*
U.S. Cl. 75—178 AM **5 Claims**

Zinc-aluminum alloys having good machinability contain from 0.01 to 1 percent magnesium, from 0.01 to 3 percent bismuth, and up to 10 percent copper, in addition to zinc and aluminum in amounts to result in the alloy having a eutectoid transformation. Heat treatment of the alloys by homogenization at a temperature between the solidus and eutectoid temperatures and subsequent cooling to ambient temperature improves the corrosion resistance.

3,798,029
LAMINATED ELECTROPHOTOGRAPHIC UNIT AND PROCESS

Arvind R. Saklikar, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

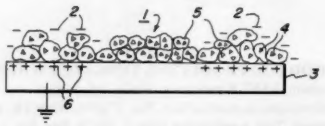
Filed July 27, 1971, Ser. No. 166,428
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 R **5 Claims**

A unit adapted for use in electrophotographic cameras and an electrophotographic process are disclosed where the unit has electrostatic charges and comprises a photosensitive member consisting of a photoconductive layer and an electroconductive layer electrostatically attached to an insulating layer. If the unit is to be used as a film and stored for later exposure, it is sealed in an encasing sheet of the insulating material. If the unit is to be exposed directly, the insulating layer can comprise a master containing an image. During formation of the unit, the photoconductive layer is given a charge of a first polarity and the insulating layer is given a charge of an opposite polarity prior to contacting the two and prior to exposure to radiation. A preferred embodiment utilizes a clear plastic insulating layer with a resistivity of 10^{14} to 10^{18} ohms-meters and a dielectric constant of about 2 which in the form of a film contains no image and in the form of a printing element contains an image.

3,798,030
PHOTOELECTROSOLOGRAPHIC IMAGING METHOD UTILIZING POWDER PARTICLES

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 32,597, April 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 679,774, Nov. 1, 1967, abandoned. This application Oct. 20, 1972, Ser. No. 299,531
Int. Cl. G03g *13/00, 5/02*
U.S. Cl. 96—1 PS **21 Claims**



A migration imaging method using a structure made from a plurality of powder particles each including a marking material and a softenable material. Charge is deposited on the powder particles and effects migration of the marking material upon softening the softenable material.

3,798,031

PHOTOCONDUCTIVE 1,2,3,4-TETRAHYDROQUINOLINES EMPLOYED IN ELECTROPHOTOGRAPHY

Wilhelmus Janssens, Aarschot; Johannes Josephus Vanheertum, Halle-Zandhoven; Robert Joseph Pollet, Vremde; Hendrik Hubert Sneyers, Wijnegem, and Jozef Aime Dierckx, Mechelen, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 9, 1972, Ser. No. 304,939

Claims priority, application Great Britain, Nov. 10, 1971, 52287/71

Int. Cl. G03g 5/06

U.S. Cl. 96—1.8 40 Claims

Electrophotographical recording process wherein a pattern of increased conductivity is produced image-wise in a photoconductive insulating recording layer containing as essential photoconductive compound a photoconductive 1,2,3,4-tetrahydroquinoline. The photoconductive compound can be chemically and spectrally sensitized and charged either negatively or positively.

3,798,032

ELECTROCONDUCTIVE COATING, ELECTROSTATOGRAPHIC COPY SHEET, AND METHODS OF MAKING AND USING THE SAME

Lewis S. Miller, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Oct. 6, 1971, Ser. No. 187,211

Int. Cl. G03g 5/10; H01b 1/06

U.S. Cl. 96—1.5 11 Claims

An improved electroconductive coating is made by incorporating in its formulation both an organic film-forming polymer and certain low molecular weight monomeric quaternary ammonium compounds. An improved electrostatographic copy sheet is made by combining a conductive layer comprising said improved electroconductive coating and a dielectric or photoconductive printing layer.

3,798,033

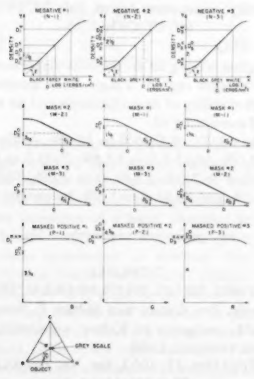
ISOLUMINOUS ADDITIVE COLOR MULTISPECTRAL DISPLAY

Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corporation, Hauppauge, N.Y.

Filed May 11, 1971, Ser. No. 142,232

Int. Cl. G03c 5/08; G03b 27/04, 33/06

U.S. Cl. 96—5 2 Claims



Each of a set of multispectral photographic negatives of a given scene is made by exposure to radiation from the scene primarily in a different spectral region, and each has substantially the same gamma. From each negative a positive mask is formed of which the gamma substantially equals minus one times the gamma of the negatives divided by one less than the number of negatives in the set. Each negative is subtractively combined in register with each positive mask made from the other negatives of the set. This forms a set of masked positives which correspond respectively to the negatives and in each of which density distribution is a function substantially exclusively of the hue and saturation distribution in the scene in the corresponding spectral region. The masked positives are combined additively in a color viewer to provide an improved multispectral display.

3,798,034

PROCESS FOR THE PRODUCTION OF HALF-TONE AND LINE WORK MULTI-COLOR PHOTOGRAPHIC IMAGES

Urbain Leopold Laridon, Wilrijk, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Feb. 25, 1972, Ser. No. 229,586

Claims priority, application Great Britain, Feb. 26, 1971, 5563/71

Int. Cl. G03c 7/16, 7/00

U.S. Cl. 96—15 7 Claims

Multi-colored half-tone and line-work positive photographic images are produced from a multi-colored original. The photographic element used comprises a support carrying a light-sensitive layer spectrally sensitized to one of the three primary color regions of the visible spectrum and containing a photopolymerizable monomer and a photopolymerization initator therefor, dispersed in a polymeric binder. The images are produced by a process comprising the steps of:

A. exposing the light-sensitive layer to actinic light through the multi-colored original,

B. heating and pressing together the exposed light-sensitive layer on a receptor surface and stripping away the temporary support together with the photopolymerized parts of the light-sensitive layer, so that the unpolymerized parts are transferred to the receptor surface in the form of a positive color separation image,

C. exposing this color separation image to actinic light to polymerize the photopolymerizable monomer,

D. repeating the above steps with two other elements comprising a temporary support carrying a light-sensitive layer spectrally sensitized to one of the two other primary color regions of the visible spectrum and also containing a photopolymerizable monomer and an initiator dispersed in a polymeric binder.

In each step (B) the exposed light-sensitive layer is heated and pressed on the receptor surface in superposition on the positive color separation image(s) already present and in register therewith.

3,798,035

METHOD OF MAKING FLEXIBLE PRINTING PLATES

Richard S. Varga, Akron, and Thomas R. Szczepanski, Royalton, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 290,399

Int. Cl. G03c 5/00; G03f 7/00

U.S. Cl. 96—35.1 3 Claims

Soluble, crystalline, low molecular weight ethylene-vinyl acetate copolymers are sensitized, typically with aromatic ketones, and can be insolubilized by exposure to U.V. light (3,200–3,800A) which selectively cures the exposed areas. Uncured material is removed by cold solvent wash leaving exposed area as a raised surface. Plates for flexographic printing are prepared from these materials by this process.

3,798,036

METHOD OF MANUFACTURING MICROSTRUCTURES

Hartmut Schnepf, Heilbronn-Klingenberg, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 31, 1972, Ser. No. 239,961

Claims priority, application Germany, Apr. 1, 1971, 2115823

Int. Cl. G03c 5/04

U.S. Cl. 96—41 3 Claims

A method of manufacturing microstructures on a substrate comprises projecting at least one mask pattern onto a substrate through an objective lens and copying a further mask pattern onto the substrate by a contact process, the contact mask for the contact process being formed by projecting a mask pattern through the same objective lens onto a material for making the contact mask.

3,798,037

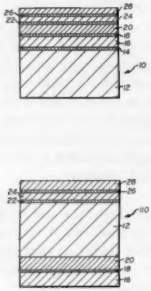
PHOTOGRAPHIC COLORING ELEMENT AND PROCESS

Avrum Silverman, 2809 Avenue K, Brooklyn, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,880

Int. Cl. G03c 1/40, 5/50, 5/08

U.S. Cl. 96—74 20 Claims



A film for producing a color image from a monochromatic image comprising at least a first layer of emulsion having a color coupler for producing a negative or a positive image in a first color of the monochromatic image. A second layer of emulsion has a second type of color coupler for producing an image in a second color with luminances reversed with respect to the image formed in the first layer. The two additional layers of emulsion each contain the same type of color coupler so that the two additional layers produce a positive masked negative image or a negative masked positive image of the monochromatic image in a third color whereby the developed film produces a colored image of the monochromatic image.

A novel process for producing the colored image from the monochromatic image is also disclosed.

3,798,038

FILM SUPPORT COATED WITH POLYESTER AND GELATIN-SILVER HALIDE EMULSION

Lothar Richter, and Georg Eichhorn, both of Berlin-Kopenick, Germany, assignors to VEB Filmfabrik Wolfen Fotochemische Werke Berlin, Berlin, Germany

Continuation of Ser. No. 60,632, Aug. 3, 1970, Pat. No. 3,694,212, Continuation of Ser. No. 630,840, April 14, 1967, abandoned. This application Sept. 26, 1972, Ser. No. 292,474

Int. Cl. G03c 1/80

U.S. Cl. 96—87 R 1 Claim

An article comprising a cellulose ester- or polyethylene terephthalate-based substrate, overlying and in contact with the substrate an adhesive coating consisting of the reaction product of a triepoxide selected from the group consisting of triglycidyl cyanurate, triglycidyl isocyanurate, and tri-(2,3-dioxypropyl) isocyanurate with an aliphatic or aromatic dicarboxylic acid containing up to 10 carbon atoms in its molecule in molar proportions of the triepoxide to the dicarboxylic acid of about 1:2, and overlying and in contact with the adhesive coating a coating of a gelatin-silver halide emulsion.

3,798,039

COPY SHEET CONTAINING SILVER SOAP AND AN ORGANIC PEROXYGEN OXIDIZING COMPOUND

Albert W. Leclair, Hudson, N.H., assignor to Nashua Corp., Nashua, N.H.

Filed Mar. 8, 1972, Ser. No. 233,385

Int. Cl. G03c 1/02, 1/76, 3/00; B41m 5/00

U.S. Cl. 96—114.1 5 Claims

An organic peroxygen oxidizing compound is incorporated in a silver soap containing white copy sheet of a two-sheet system to enhance the image contrast and reduce coloring of background areas.

3,798,040

RARE-EARTH SILICA REFRACTORY CERAMIC MATERIALS AND METHOD FOR PRODUCING SAME

George J. Kamin, Towanda, and William T. Kiger, Athens, both of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 2, 1971, Ser. No. 120,307

Int. Cl. C04b 35/50

U.S. Cl. 106—39 R 12 Claims

Rare-earth oxide silica ceramic refractory compositions are disclosed comprising a rare-earth oxide and silica in specific mole ratios. The rare-earth oxides specifically preferred are yttrium, and misch metal. Processes for producing refractory materials as well as shaped refractory bodies are also disclosed.

3,798,041

OPTICAL GLASS HAVING ANOMALOUS DISPERSION PROPERTIES

Tetsuro Izumitani, and Isao Masuda, both of Tokyo, Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed July 24, 1972, Ser. No. 274,384

Claims priority, application Japan, July 23, 1971, 46-55113

Int. Cl. C03c 3/16

U.S. Cl. 106—47 Q 2 Claims

An optical glass having an anomalous dispersion property in the short wavelength region, a high Abbe number of greater than 52, a high stability of devitrification and an excellent acid resistance and consisting of.

P_2O_5 44.0 to 68.0%, B_2O_3 5.0 to 21.0%, Al_2O_3 1.0 to 8.0%, BaO 4.0 to 33.0%, MgO 1.0 to 14.5%, ZnO 0 to 10.5%, SrO 0 to 12.0%, CaO 0 to 7.0%, La_2O_3 0 to 9.0%, ThO_2 0 to 7.0%, TiO_2 0.5 to 4.2% and As_2O_3 0 to 3.5%, by weight is disclosed.

3,798,042

REFRACTORY SHAPE WITH PREREACTED GRAIN

Joseph E. Neely, Los Gatos, and Sidney F. Brown, Milpitas, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 17, 1972, Ser. No. 298,442

Int. Cl. C04b 35/24, 35/42

U.S. Cl. 106—59 15 Claims

A refractory shape exhibiting physical and chemical stability, good high temperature strength, reduced firing shrinkage,

and improved thermal shock resistance is made from an admixture of periclase refractory grain, refractory chrome ore grain, and a prereacted chrome-magnesia grain made by reacting a finely divided admixture of magnesia-yielding material and refractory chrome ore material at elevated temperatures.

3,798,043

HIGH STRENGTH REFRACTORY CONCRETE

Rudolph W. Wallouch, Lewiston, N.Y., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 261,122, June 8, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,466
Int. Cl. C04b *35/02*
U.S. Cl. 106—64 **12 Claims**

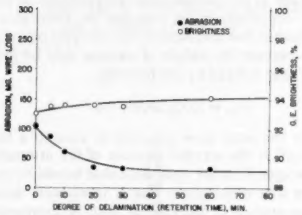
A refractory concrete of improved strength made from calcium-aluminate cement, a refractory aggregate of ferrochromium slag, and as an additive, powdered boron phosphate. According to the method of the invention the graded slag is admixed with the phosphate additive and aluminate cement to form a concrete grog, which is subsequently fired in air to temperatures of 1,000°C or higher. A ceramic-type bond is thereby formed, transforming the concrete rapidly into a dense refractory body.

3,798,044

PROCESS FOR MANUFACTURING CALCINED KAOLINITIC CLAY PRODUCTS

James Brooks Whitley, and William Floyd Abercrombie, Jr., both of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Filed June 7, 1972, Ser. No. 263,381
Int. Cl. C08h *17/06;* **C09c** *1/28*
U.S. Cl. 106—288 B **4 Claims**



A process for producing calcined mineral products having improved brightness and significantly reduced abrasion is disclosed. In accordance with the invention, mineral such as kaolin clay, are delaminated by agitating a slurry of the minerals in the presence of a hard, abrasive grinding media, such as glass beads, which have a specific gravity higher than the mineral-water suspension or mixture. The delaminated particulates are then filtered, dried and calcined at a temperature in excess of 750° C to remove the water of hydration and bring about a sharp exothermic reaction. In one method embodiment, the minerals or clays are subjected to a high intensity magnetic field, prior to the delamination, to remove foreign matter or contaminants which are deleterious to the production of a calcined pigment having a high brightness and a low abrasive index. The calcined products of the invention may be used in the coating and filling of paper, in paints, as reinforcing fillers or pigments in elastomers and the like.

3,798,045

SILICA ENCAPSULATED LEAD CHROMATE PIGMENT OF THE PRIMROSE YELLOW SHADE

Julius Jackson, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 206,125, Dec. 8, 1971, abandoned. This application Sept. 27, 1972, Ser. No. 292,502
Int. Cl. C09c *1/20*
U.S. Cl. 106—298 **1 Claim**

A primrose yellow shade pigment of outstanding light stability is prepared. The pigment comprises orthorhombic phase particles of a chemically prereduced lead chromate-lead sulfate solid solution, which particles are encapsulated with a dense amorphous silica coating.

3,798,046

MODIFIED, PRECIPITATED ALUMINO SILICATE PIGMENTS AND AN IMPROVED METHOD FOR PREPARING SAME

Robert C. Fitton, Bel Air, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Nov. 5, 1971, Ser. No. 198,022
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 **9 Claims**

Novel alkali aluminum silicate particulates modified with and containing a chemically bound alkaline earth metal, and a method for producing same is disclosed. The alumino silicate pigments contain an alkaline earth metal, preferably calcium, magnesium or barium in addition to an alkali metal, such as sodium. In chemical composition, the pigments contain oxides of the alkaline earth metal, the alkali metal, aluminum and silicon and are distinguishable from co-precipitates. The pigments are prepared by introducing dilute solutions of an alkali silicate and an aluminum salt of a mineral acid into an agitated aqueous receiving medium containing an alkaline earth salt or hydroxide. The pH of the fuild reaction medium may be controlled to form finely divided precipitated particulates having improved properties and which may be used as pigments in paper, paint, rubber, inks, plastics and the like.

3,798,047

PIGMENT FOR COATING PAPER AND MANUFACTURE THEREOF

Pierre Delfósse, Paris, France, assignor to Omya S.A., Paris, France

Filed Dec. 9, 1971, Ser. No. 206,255
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 **7 Claims**

A pigment for coating paper comprises an intimate mixture of 40–95 parts of natural calcium carbonate and 60–5 parts of satin white, at least 80 percent of the satin white being smaller than two microns. The pigment is prepared by grinding the components together, one of the components being in suspension.

3,798,048

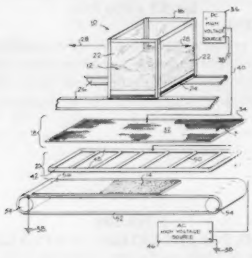
METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING AN OBJECT

Albert C. Brody, Philadelphia, and Edward Lipkin, Wyncote, both of Pa., assignors to Nyvel Corporation, Croyden, Pa.

Filed July 27, 1971, Ser. No. 166,364
Int. Cl. B05b *5/00;* **B44d** *1/092*
U.S. Cl. 117—17 **10 Claims**

An apparatus and method for electrostatically applying a plurality of particles such as flock to an object. The particles

are placed into a hopper at an uppermost portion of the apparatus and are propelled downwardly through a metallic screen to which an unchanging electrical charge is applied. The particles are given a predetermined orientation and continue their downward passage through a metallic grid to which



a changing electrical charge is applied. In another embodiment, the flock is propelled in an upward direction through changing and unchanging electrically charged zones. The particles attach themselves to the object in a uniformly dense manner and substantially align themselves in accordance with the electrostatic lines of force.

3,798,049

METHOD FOR THE DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES

Horst Kosche, Feldstrasse 21, Dueren-Lendersdorf, Germany

Filed Apr. 6, 1972, Ser. No. 241,824

Claims priority, application Austria, Apr. 9, 1971, 3075/71

Int. Cl. G03g *13/10*

U.S. Cl. 117—37 LE **13 Claims**

A method for developing electrostatic latent images comprises applying a developer, which comprises a liquid or paste vehicle containing toner particles, to an electrostatically charged surface from a roller or other applicator. The liquid or paste developer is applied in a very thin film to the roller so that substantially the only toner particles contained in the liquid or paste film are in the electrical double layer formed at the roller — liquid (paste) interface. The applicator, or at least the outer surface thereof, is made of a material with a dielectric constant between about 100 and 10,000 preferably a titanate of a bivalent metal, e.g., barium titanate or calcium titanate (perovskite). The developer is preferably a thixotropic dispersion of polarizeable toner particles in a non-polar liquid.

3,798,050

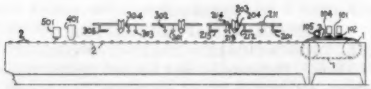
CATALYTIC SENSITIZATION OF SUBSTRATES FOR METALLIZATION

Helmut Franz, Oakmont, and Roy G. Crissman, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 28, 1971, Ser. No. 147,790

Int. Cl. B44d *1/08;* **C03c** *17/10*

U.S. Cl. 117—47 A **5 Claims**



Metal films of improved uniformity are formed on substrates having their surfaces sensitized by the deposition of palladium on tin by buffering the palladium salt solution in contact with the glass at a pH from 6 to 9. Buffering is preferably accomplished by contacting the substrate with an aqueous buffering solution and an acidic palladium salt solution.

3,798,051

METHOD FOR ENHANCING THE ADHESIVENESS OF FIBER TO RUBBER AND THE TREATED FIBER

Eiichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1972, Ser. No. 248,067

Int. Cl. B32b *25/00;* **B32b** *25/02*

U.S. Cl. 117—75 **16 Claims**

Diallylaminomethyl-resorcinol compositions are described which are useful for adhering fiber to rubber.

3,798,052

POLYVINYLIDENE FLUORIDE COATING FOR METALS

Joachim Ebeling, Tacherting, Germany, assignor to Sudeutsche Kalkstickstoff-Werke AG, Trostberg, Germany

Filed June 28, 1972, Ser. No. 267,014

Claims priority, application Germany, June 30, 1971, 2132645

Int. Cl. B32b *15/08*

U.S. Cl. 117—75 **6 Claims**

A firmly adhering coating on a metal includes a baked base layer whose binder component is a linear polyester resin and a hardener for the same, and a baked surface layer essentially consisting of 10 to 40 percent of the polyester resin employed in the base layer and 60 to 90 percent polyvinylidene fluoride.

3,798,053

CONTROL OF ATMOSPHERIC COMPOSITION DURING RADIATION CURING

Thomas F. Huemmer, South Bend, Ind., assignor to The O'Brien Corporation, South Bend, Ind.

Filed Mar. 30, 1971, Ser. No. 129,586

Int. Cl. B44d *1/50;* **C09d** *3/58, 3/72*

U.S. Cl. 117—93.31 **4 Claims**

A method for in situ radiation polymerization or curing of air inhibited compositions as coatings on substrates in the presence of limited but still substantial amounts of oxygen. As much as 7.5 percent by weight of oxygen may be present if the radiation dose is fixed by the formula:

$$(D_r = X(O_2 \text{ level}) + C$$

wherein D_r is the total dose required to cure to a tack-free state. (O_2 level) is the oxygen content of the atmosphere in percent by weight, C is the total dose that would be required in an oxygen free atmosphere and X is variable depending upon the composition of the coating and the composition of the inert atmosphere.

3,798,054

METHOD OF SUGAR COATING TABLETS

Ryuichi Kawata, 16-12, Sendagi 3-chome, Bunkyo-ku, Tokyo; Hiroitsu Kawada, 30-29-22, Hasune 2-chome, Itabashi-ku, Tokyo; Tadayoshi Ohmura, 11-12, Honcho 1-chome, Kurumemachi, Kitatamagun, Tokyo; Katsuhiko Yano, 16-1 Hasune 3-chome, Itabashi-ku, Tokyo; Hiroshi Sugiura, 16-1 Hasune 3-chome, Itabashi-ku, Tokyo, and Nobuo Takada, 16-1 Hasune 3-chome, Itabushi-ku, Tokyo, all of Japan

Filed Sept. 24, 1971, Ser. No. 183,635

Claims priority, application Japan, Sept. 25, 1970, 45-83917

Int. Cl. B32b *1/00*

U.S. Cl. 117—100 A **4 Claims**

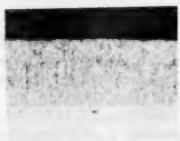
A sugar-coated tablet characterized by high stability is prepared by a simple and commercially feasible procedure.

The tablet is prepared by applying to the tablet core an aqueous sugar solution containing calcium lactate.

3,798,055
VAPOR DEPOSITION PROCESS

Charles d'A. Hunt, Moraga, Calif., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 790,500, Dec. 13, 1968, Pat. No. 3,652,325. This application Dec. 27, 1971, Ser. No. 212,250
Int. Cl. C23c *13/02*
U.S. Cl. 117—107 **3 Claims**

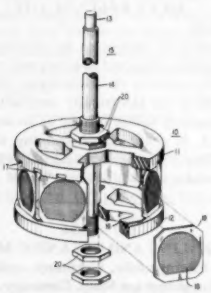


A vacuum vapor deposition process is described for depositing a coating of a cobalt-base alloy on a substrate. The quality of the deposited coating is improved by maintaining the substrate above a minimum temperature of 1,600°F. in the case of alloys with substantially soluble constituents, and of 1,700°F. in the case of alloys having at least partially insoluble constituents.

3,798,056
ELECTROLESS PLATING PROCESS

Yutaka Okinaka, Madison, and Richard Sard, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1972, Ser. No. 241,363
Int. Cl. B01k *1/00*; **C23c** *17/00*
U.S. Cl. 117—113 **3 Claims**



Improved deposition rates from electroless plating baths are described. The increase in deposition rate, which may be as great as seven-fold, arises from the use of a rotating substrate holder. Where uniformity of thickness is critical, periodic reversal of rotation may be used.

3,798,057
IMPREGNATED FIBROUS WEB STRUCTURES

Walter Polovina, Princeton, N.J., assignor to AB Carl Munters, Sollentuna, Sweden

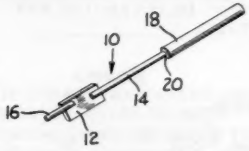
Filed Oct. 5, 1971, Ser. No. 186,768
Int. Cl. B32b *19/02*; **C08g** *45/04*
U.S. Cl. 117—126 AB **12 Claims**

Fibrous webs, such as asbestos paper, are impregnated with a mixture of a chlorinated polymeric C_2 or C_3 hydrocarbon, a chlorinated terphenyl or chlorinated paraffin plasticizer, and a polyepoxy compound. The impregnated webs, when suitably shaped, are useful as contact tower air and water contact bodies.

3,798,058
REFRACTORY METAL PHOSPHATE AND PHOSPHIDE COATINGS FOR REFRACTORY METAL LEADS AND PROCESS FOR PRODUCING METAL PHOSPHIDES

Vincent Chiola, 329 York Ave.; James S. Smith, and Clarence D. Vanderpool, both of R.D. 2, all of Towanda, Pa.

Division of Ser. No. 3,937, Jan. 19, 1970, which is a continuation-in-part of Ser. No. 647,106, June 19, 1967, abandoned. This application Jan. 13, 1972, Ser. No. 217,491
Int. Cl. C23c *11/00*; **H01j** *1/88*
U.S. Cl. 117—201 **6 Claims**



Lamps operating at high temperatures, and more particularly incandescent or arc lamps having sealed-in lead-in electrical conductors with improved service characteristics and longer service life are fabricated with a "coating" on the aforesaid leads comprising at least one of the following: a phosphate or phosphide of tungsten, or a phosphate or phosphide of molybdenum.

Illustrative of the results obtained upon service testing 400-W, 120-V quartz-iodine lamps, at operating temperatures of 500°–600°C., using

A. untreated, uncoated, molybdenum electrode assemblies,
B. platinum-clad, molybdenum electrode assemblies (exemplary of the prior-art techniques), and
C. tungsten phosphate-coated molybdenum electrode assemblies,

are as follows:

A. failed through oxidation and subsequent disintegration, with accompanying seal and lamp failure at 100 hours' operation,
B. failed at approximately 150 hours of life testing,
C. was still operating on a life test after 200 hours.

Processes for forming metal phosphides from metal phosphates and process for coating leads with refractory metal phosphates and phosphides are also disclosed.

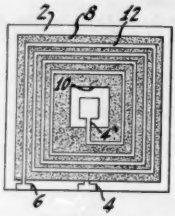
3,798,059
THICK FILM INDUCTOR WITH FERROMAGNETIC CORE

Brian Astle, Indianapolis, Ind., and Jean Marie Guiot, Ann Arbor, Mich., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 29,957
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **13 Claims**

Thick film inductor suitable for hybrid integrated circuits

comprising successive layers of powdered sintered ferromagnetic material in a cured catalyst-hardenable resin binder and



a pattern of conductors comprising powdered metal in a cured catalyst-hardenable resin.

3,798,060

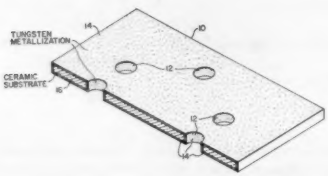
METHODS FOR FABRICATING CERAMIC CIRCUIT BOARDS WITH CONDUCTIVE THROUGH HOLES

Wallace D. Reed, and Richard A. Stoltz, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 28, 1971, Ser. No. 193,461

Int. Cl. C23c *11/02, 3/00*

U.S. Cl. 117—212 **6 Claims**



A method for preparing double-sided circuit boards for electrical circuits wherein a ceramic substrate containing a plurality of holes is metallized by chemical vapor deposition of tungsten on the surface and through the holes and is etched delineate conductive patterns. There is also provided the product produced by this process. The process is preferably used on electronic microcircuits with alumina or beryllia substrates where electrical interconnections between conductive patterns the two outer surfaces and between the outer surfaces and the innerlayers are provided by through-hole metallization.

3,798,061

METHOD FOR FORMING A SINGLE-LAYER NITRIDE FILM OR A MULTI-LAYER NITRUDE FILM ON A PORTION OF THE WHOLE OF THE SURFACE OF A SEMICONDUCTOR SUBSTRATE OR ELEMENT

Shumpei Yamazaki, 20, No. 7, 1-chome Shinkawa, Shizuoka, Japan

Continuation of Ser. No. 672,402, Oct. 2, 1967, abandoned. This application July 13, 1970, Ser. No. 56,208

Claims priority, application Japan, Oct. 17, 1967, 42-2077; Oct. 7, 1966, 41-66000

Int. Cl. B44d *1/16, 1/18*

U.S. Cl. 117—213 **8 Claims**

The process for preparing an electrically insulating nitride surface coating on a silicon or germanium semiconductor substrate comprising oxidizing the surface of a silicon or germanium semiconductor to form a stain film on said surface; nitriding said oxide stain film surface by heating to a temperature above 600°C in a reactive atmosphere comprising gaseous nitrogen, ammonia or hydrazine and applying ultraviolet light to said surface whereby a chemically and physically stable electrical insulating nitride surfaced semiconductor is formed. The invention also includes a process for preparing a multilayer nitride surface coating on a silicon or germanium substrate in which the first layer is formed as set forth in the preceding sentence and then one or more additional layers are formed by heating the semiconductor having the aforesaid first layer with a gaseous mixture of (i) a silicon compound selected from the group consisting of silicon halide and silane and (ii) a compound selected from the group consisting of nitrogen, ammonia and hydrazine to form a silicon nitride surface on said nitride surfaced semiconductor. The invention also includes the nitride surfaced semiconductor which may be produced by the foregoing processes.

3,798,062

METHOD OF MANUFACTURING A PLANAR DEVICE

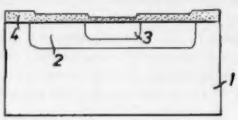
Werner Mroczeck, and Werner Scherber, both of Heilbronn, Germany, assignors to Licentia Patent-Vermaltungs-GmbH, Frankfurt am Main, Germany

Filed Sept. 27, 1971, Ser. No. 184,176

Claims priority, application Germany, Sept. 30, 1970, 2047998

Int. Cl. H01l *7/44*

U.S. Cl. 117—212 **12 Claims**



A method of manufacturing a planar device includes removing at least a portion of an insulating layer used as a mask for producing a region or regions in a semiconductor body and replacing this insulating layer with a layer of silicon nitride.

3,798,063

FINELY DIVIDED RuO_2 PLASTIC MATRIX ELECTRODE

Denis F. Decraene, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 29, 1971, Ser. No. 203,059

Int. Cl. B44d *1/34, 1/18*

U.S. Cl. 117—230 **9 Claims**

Finely divided RuO_2 serves as an efficient and long-lived electrocatalyst when dispersed in a polymer matrix chemically and mechanically inert to an electrolyte. When applied to a substrate, generally an electrically conductive substrate, an electrode, particularly suited for use as an anode at which oxygen is evolved, is obtained. A coating of polyvinylidene fluoride containing RuO_2 having a particle size of less than 0.1 micron on a titanium substrate is exemplary.

3,798,064

CONGEALING AND CLEANING MIXTURE

Hans Amoser, Rheingaublic, Germany, assignor to Braas & Co. GmbH, Frankfurt am Main, Germany

Filed Dec. 10, 1971, Ser. No. 206,873

Claims priority, application Germany, Dec. 16, 1970, 2061827

Int. Cl. B08b *7/00, 9/08*

U.S. Cl. 134—7 **10 Claims**

A granular, fluid mixture comprising polyvinyl chloride, a lubricant, sodium tripolyphosphate, and optionally a basic heavy metal compound, and a method of employing the mixture in cleaning the hot metal pots of appliances used in

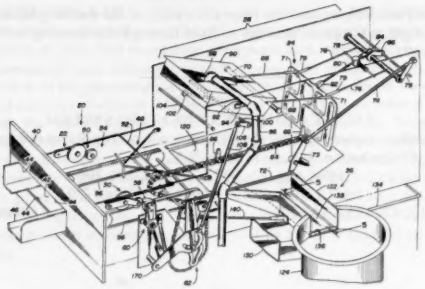
processing plastics are disclosed. This composition and process eliminate the necessity of cooling, shutting down, and dismantling plastic processing appliances before cleaning them free of plastic residues.

3,798,065

TRAY WASHING SYSTEM

Lawrence Pete Kitterman, 1309 Woodway, Hurst, Tex., and Howard Gene Rice, 1109 Hadrian Ct., Irving, Tex.

Filed Nov. 13, 1970, Ser. No. 89,401
Int. Cl. B08b *3/04, 9/00, 11/00*
U.S. Cl. 134—25 R **13 Claims**



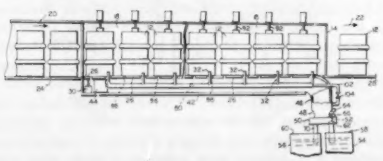
A tray washing system includes conveyors which transport compartmented food service trays from a tray receiving mechanism to inverting and scrapping mechanisms and through washing, rinsing and drying mechanisms to a stacking mechanism. The receiving mechanism restricts trays to insertion in a predetermined orientation in which the food receiving surfaces face upwardly, and the inverting mechanism inverts each tray so that the feed receiving surface faces downwardly. As each tray is inverted, the scrapping mechanism discharges substantially the entire contents of a cleaning fluid reservoir onto the food receiving surface of the tray, and thereby dislodges refuse and silverware that may be on the tray. The washing, rinsing and drying mechanism apply a water-detergent solution, rinse water, and drying air to the trays, respectively, and the stacking mechanism deposits the trays onto a mobile self-depressing tray receiver. The tray washing system further includes a silverware separating and soaking mechanism comprising a chute which receives cleaning fluid and refuse and silverware entrained therein, a dam which removes the heavier silverware from the cleaning fluid, and a door in the bottom of the chute for dropping the silverware into a soaking sink.

3,798,066

METHOD OF RECONDITIONING USED STEEL DRUMS

Robert G. Evans, 1255 Peters Rd., Harvey, La.

Filed Mar. 10, 1972, Ser. No. 236,529
Int. Cl. B08b *3/02, 3/10*
U.S. Cl. 134—27 **12 Claims**



The method and apparatus for reconditioning used steel drums containing organic matter, rust, interior linings, and the like, preheating the drums up to 700°F, chemical and/or water washing the drums' interior with high pressure spray and draining, a sulfuric acid solution bath spray impinging on said surface while heated, a hydrochloric acid solution bath spray impining on said surface after the sulfuric acid is drained off, a water bath and drain stage for reducing the acidity in the drum, and a neutralizing bath to clean the final remnants of any presence of an acid from the inner surfaces of the drum.

3,798,067

ELECTROLYTIC CELL AND METHOD FOR MAKING SAME

Dieter Kunze, Kelkheim, Germany, assignor to Varta Aktiengesellschaft, Kelkheim/Ts., Germany

Filed Oct. 17, 1972, Ser. No. 298,258
Claims priority, application Germany, Oct. 18, 1971, 2151736; Oct. 18, 1971, 2151734
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 LN **10 Claims**

An electrolytic or galvanic cell has at least one electrode having silver as an active substance and a solid electrolyte essentially consisting of silver iodide and silver selenate. In making the cell, the electrolyte is pressed into a tablet, a mixture of silver and electrolyte powder is pressed onto one side of the tablet and a mixture containing graphite and electrolyte powder is pressed onto the other side of the tablet.

3,798,068

ELECTROLYTIC AND GALVANIC CELLS AND METHOD OF MANUFACTURE THEREOF

Dieter Kunze, Kelkheim, Germany, assignor to Varta Aktiengesellschaft, Kelkheim/Ts., Germany

Filed Oct. 17, 1972, Ser. No. 298,259
Claims priority, application Germany, Oct. 18, 1971, 2151735; Oct. 18, 1972, 2151732
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 LN **10 Claims**

An electrolytic cell, such as a control cell, or a galvanic cell, such as a primary cell, includes at least one silver electrode and a solid electrolyte, the latter consisting essentially of a mixture of 80 to 90 Mol percent silver iodide and 10 to 20 Mol percent silver tungstenate. The method of manufacturing the electrolytic or galvanic cell includes the steps of pressing the electrolyte into a tablet and thereafter pressing onto a first side of the electrolyte tablet a mixture of silver, electrolyte powder and possibly graphite; and pressing onto the second side of the tablet a mixture including graphite and electrolyte powder. In the manufacture of galvanic cells, the mixture pressed onto the second side also includes an iodine-yielding compound.

3,798,069

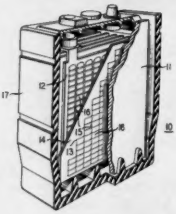
BATTERY STRUCTURE INCORPORATING CHLORINE SCAVENGER

John Broadhead, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 10, 1972, Ser. No. 251,921
Int. Cl. H01m *39/04*
U.S. Cl. 136—26 **4 Claims**

A lead-acid battery is described which incorporates a chlorine scavenger which converts molecular or ionic chlorine to an organic chloride which is inert and does not interfere with the electrochemical process of battery operation. Organic compounds which are useful as chlorine scavengers contain a multiple carbon-to-carbon bond and contain a polar group to make the scavenger substance soluble in the electrolyte. Chlorine scavenger material is especially useful in

lead-acid batteries used primarily in the float condition, and/or where the battery is hermetically sealed. Scavenger



material can be incorporated in the battery in a variety of ways as, for example, in the separator material.

3,798,070

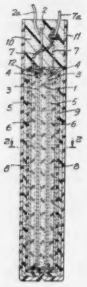
LEAD-ACID STORAGE BATTERY WITH TITANYL SULFATE BUFFERED ELECTROLYTE

Samuel Ruben, 52 Seacord Rd., New Rochelle, N.Y.

Continuation-in-part of Ser. Nos. 886,415, Dec. 18, 1969, abandoned, and Ser. No. 166,717, May 12, 1972, abandoned. This application May 12, 1972, Ser. No. 252,724

Int. Cl. H01m *39/00*

U.S. Cl. 136—26 **19 Claims**



A titanium grid is used to support the positive electrode of lead peroxide while the negative porous lead electrode is supported on either a copper or titanium grid in a lead-lead-acid storage battery. A small quantity of titanyl sulfate is added to the aqueous sulfuric acid electrolyte to inhibit dissolubility of the titanium therein. In one battery embodiment the electrolyte is immobilized by gelling and confined between the electrodes while the assembly is surrounded with an insulating wrapping and sealed hermetically in a quantity of cured epoxy resin.

3,798,071

MAKING ELECTRICAL CONNECTIONS THROUGH A STORAGE BATTERY WALL

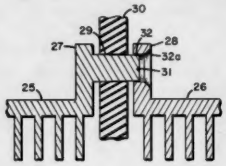
Anthony Sabatino, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Continuation-in-part of Ser. No. 668,395, Sept. 18, 1967. This application June 5, 1969, Ser. No. 830,834. The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.

Int. Cl. H01m *5/00*

U.S. Cl. 136—134 R **3 Claims**

Two connector members, one on each side of the battery wall, are brought close to one another through an opening in the wall. The parts are then joined together by fusion and after fusing, pressure is applied to force the members to press firmly



and securely against the respective sides of the wall to produce a tight seal against leakage of fluid through the opening in the wall.

3,798,072

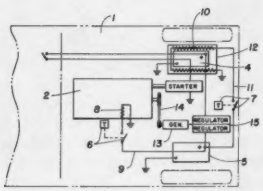
ENGINE COMPONENT HEATING SYSTEM

Arthur Anderson, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,306

Int. Cl. F01m *5/02*; **B60l** *1/02*; **F02n** *17/02*

U.S. Cl. 123—142.5 E **5 Claims**



A heating unit for the oil dip stick of the oil system of the engine of an automotive vehicle is electrically connected to an auxiliary battery via a thermostatically controlled switch. The heating unit thereby heats the oil when the temperature drops below a predetermined level.

3,798,073

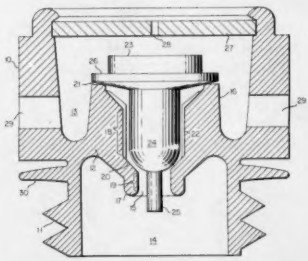
SUBMERSIBLE BATTERY VENT PLUG

David L. Karpal, Pomona, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Oct. 10, 1972, Ser. No. 295,912

Int. Cl. H01m *1/06*

U.S. Cl. 136—178 **5 Claims**



A submersible battery vent plug is disclosed which includes a valve with a double seal, the first seal being adapted to close

under an initial fluid pressure and the second seal adapted to close under a pressure higher than the initial pressure.

3,798,074

SURFACE FINISHING

Donald F. Esler, Natrona Heights, and Edward G. Choby, Jr., Pittsburgh, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Mar. 23, 1972, Ser. No. 237,557The portion of the term of this patent subsequent to Nov. 21, 1989, has been disclaimed.

Int. Cl. C23f *7/00*

U.S. Cl. 148—6.16 **102 Claims**

A composition for providing a protective coating, comprised of a solution containing phosphate ions, chromate ions, ammonium ions, silicate ions and cations. The molar concentration of the phosphate ions, chromate ions, ammonium ions and cations is between 0.01 and 1 mole per 100 ml. of solvent, and the molar concentration of the silicate ions is from 0.01–33 percent of the molar concentration of the phosphate ions, chromate ions, ammonium ions and cations. The phosphate ions, chromate ions, ammonium ions and cations are proportionately present in the solution as 8–78 mole percent phosphate ion, 2–45 mole percent chromate ion, 1–56 mole percent ammonium ion and 0.01 to 55 mole percent cation.

3,798,075

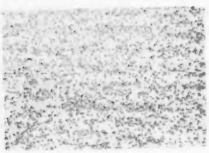
METHOD OF MAKING STAINLESS STEEL CONTAINING BORIDES

Lee P. Bendel, Lebanon, N.J., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Mar. 10, 1970, Ser. No. 18,045

Int. Cl. C21d *7/00, 7/14*

U.S. Cl. 148—12 **9 Claims**



A method for making stainless steel containing small, uniformly distributed boride particles and the product of such process having an improved absorption cross-section for thermal neutrons, in which a stainless steel containing about 0.1 to 4 percent by weight boron after being prepared in a convenient intermediate form is heated at or just above a critical temperature of from 2,275° to 2,325° F. at least long enough for it to be heated throughout to temperature and then it is rapidly cooled. The intermediate form is then worked to effect substantially uniform distribution of the boride particles. When necessary to prevent sagging and tearing of the intermediate form while it is being heat treated, it is supported while at heat. After cooling the support is removed before working.

3,798,076

METHOD FOR PRODUCING AL-KILLED DEEP DRAWING COLD ROLLED STEEL PLATE BY CONTINUOUS ANNEALING

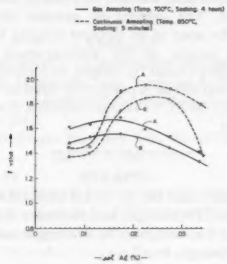
Mineo Shimizu; Hiroshi Takechi; Kenichiro Suemune; Setsuo Nagao, and Kuniteru Ohta, all of Kitakyusyu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 27, 1972, Ser. No. 248,242

Claims priority, application Japan, Apr. 27, 1971, 46-027179

Int. Cl. C21d *9/48*

U.S. Cl. 148—12 **2 Claims**



A method of producing an aluminum-killed cold rolled steel sheet for deep drawing by a continuous annealing, which comprises cold rolling a hot rolled steel plate containing not more than 0.015 percent of carbon, 0.05 to 0.50 percent of manganese, 0.13 to 0.33 percent of soluble aluminum with the balance being iron and unavoidable impurities.

3,798,077

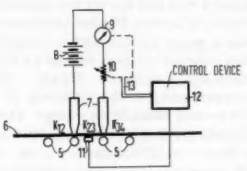
METHOD FOR ALIGNING MECHANICAL FILTERS

Alfhart Gunther, Haar, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 24, 1971, Ser. No. 183,423

Int. Cl. C21d *1/00*; **C22f** *1/00*

U.S. Cl. 148—13 **5 Claims**



In a mechanical filter, the coupling elements coupling the individual filter resonators to each other comprise a material having a Young's modulus dependent upon the final heat treatment temperature. In a method for aligning the filter, the coupling elements are subjected to heat treatment, the maximum temperature of which is higher than the final heat treatment temperature.

3,798,078

WELDING SUBSTANCE AND METHOD OF MAKING SAME

Kurt Lettner, and Jakob Hans Finkenauer, both of Lohhof, Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Oct. 12, 1971, Ser. No. 188,456

Claims priority, application Germany, Oct. 14, 1970, 2050482

Int. Cl. B23k *35/24*; C22b *9/10*

U.S. Cl. 148—26 4 Claims

A welding substance such as a submerged arc-welding powder, powdered welding flux, electrode-coating flux and welding assist, and welding-rod core material, is made at least in part from a hydraulic cement or cement clinker after calcination thereof. The cement or cement clinker (cement precursor) can be used in an amount ranging between 5 and 90 percent by weight of the welding-assist composition, preferably 35 - 65 percent by weight, in a particle size below 2.5 mm. The composition is preferably fired at a temperature between 400° to 1,000°C to ensure complete removal of water of crystallization.

3,798,079

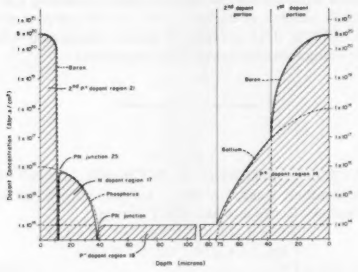
TRIPLE DIFFUSED HIGH VOLTAGE TRANSISTOR

Chang Kwei Chu, Pittsburgh, and Surinder Krishna, Greensburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1972, Ser. No. 259,404

Int. Cl. H01l *3/14*

U.S. Cl. 148—33.5 4 Claims



A high voltage transistor with improved surge voltage capacity is formed in a silicon semiconductor body of thickness of at least 4 mils and having two opposed major surfaces and a resistivity of at least 30 ohm-centimeters. A collector region adjoins a major surface and is comprised of three portions: The first collector portion adjoins a PN junction and has a substantially uniform dopant concentration therethrough corresponding to the resistivity of the body to support a desired reverse breakdown voltage. The second collector portion adjoins the major surface and has a dopant concentration of at least 1×10^{19} atoms per cubic centimeter at said surface and a steep dopant concentration gradient to provide for good ohmic and thermal contact properties. The third collector portion is intermediate the first and second collector portions and has higher dopant concentrations than said first collector portion, but lower than said second collector portion, and has a shallower dopant concentration gradient that said second collector portion to support a reverse breakdown surge voltage through the transistor.

Preferably the transistor is the PNP type made by simultaneously diffusing boron and gallium and/or aluminum into the major surface of a silicon wafer or body having a given concentration level of N-type dopant therethrough. Thus the various portions of the collector region are simultaneously formed.

3,798,080

METHOD OF PRODUCING A SEMICONDUCTOR COMPONENT

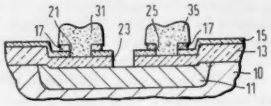
Wolfgang Henning; Konstantin Von Hoerschelmann; Ingo Kruger, and Herbert Weidlich, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 22, 1971, Ser. No. 136,341

Claims priority, application Germany, Apr. 27, 1970, 2020531

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 2 Claims



In producing a semiconductor component, the use of a silicon nitride layer as an etching stencil, provides an exact positioning of various windows, relative one another, in a silicon dioxide layer, arranged on a semiconductor body. The method is particularly suitable for producing high-frequency transistors of comb structure in planar technology.

3,798,081

METHOD FOR DIFFUSING AS INTO SILICON FROM A SOLID PHASE

Klaus Dietrich Beyer, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,033

Int. Cl. H01l *7/34*

U.S. Cl. 148—188 19 Claims

A process for diffusing As into a silicon substrate forming diffused regions having a surface impurity concentration in excess of 10^{19} atoms/cc by forming a composite layer of an upper As doped glassy layer and an underlying SiO_2 layer at the interface of the substrate and glassy layer, and heating the substrate and layers in an inert atmosphere to diffuse the As from the solid phase glassy layer through the SiO_2 layer and into the substrate to the desired depth.

3,798,082

TECHNIQUE FOR THE FABRICATION OF A PN JUNCTION DEVICE

Bertram Schwartz, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 83,416, Oct. 23, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,639

Int. Cl. H01l *7/34*

U.S. Cl. 148—188 8 Claims

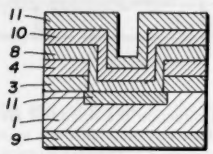
A passivated p-n junction device in which the junction is prevented from rising to the crystallographic surface by the interposition of a semi-insulating layer intermediate the crystallographic surface and the electrical surface is described. The structure is fabricated by forming a semi-insulating layer upon the surface of an n-type Group III(a) – V(a) compound semiconductor, generating a window therein and introducing a p-type material through the window.

3,798,083

FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 134,240, April 15, 1971, Pat. No. 3,728,784. This application Dec. 8, 1972, Ser. No. 313,315
Int. Cl. H01l 7/44
U.S. Cl. 148—188 5 Claims



The disclosure herein pertains to methods for fabricating planar, discrete or monolithic arrays of semiconductor devices, particularly light-emitting diodes and arrays thereof. The disclosure more particularly concerns diffusion processes to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,798,084

SIMULTANEOUS DIFFUSION PROCESSING

Vincent J. Lyons, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 2,287, Jan. 12, 1970, abandoned. This application Aug. 11, 1972, Ser. No. 279,902
Int. Cl. H01l 7/44
U.S. Cl. 148—189 8 Claims

Emitter and base regions of a semiconductor device may be formed simultaneously by a capsule diffusion with a source containing both N type and P type dopants. The dopants utilized must have substantially different diffusion rates. For instance, for a silicon semiconductor substrate, the source may be formed of boron and arsenic-doped silicon.

3,798,085

MANUFACTURE OF A BURNING RATE DETERRENT COATED PROPELLANT

Dale F. Mellow, Stanhope, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 177,813, Sept. 3, 1971, Pat. No. 3,743,554. This application Feb. 12, 1973, Ser. No. 331,422
Int. Cl. C06b 19/02
U.S. Cl. 149—10 15 Claims

Manufacture of burning rate deterrent coated propellants by contacting a nitrocellulose smokeless powder, at an elevated temperature, with a defined linear polyester of a new class of burning rate deterrents, which wets, and diffuses into the smokeless powder at the elevated temperature level, as a plasticizer therefor, but is substantially non-migrating within the smokeless powder at lower temperatures; effecting the contacting step under conditions causing the polyester to coat and penetrate the smokeless powder to form the coated propellant; and then reducing the temperature of the resulting deterrent coated propellant to the lower temperature above described.

Also provided, are nitrocellulose smokeless powder propellants having as a burning rate deterrent, the defined polyester coating diffused by its own plasticizing action into the propellant to form a resulting burning rate gradient therefor.

3,798,086

HIGH-ENERGY SOLID PROPELLANT BINDER

Adolf H. Muenker, Somerset; Leland K. Beach, Westfield, and Herschel T. White, Montclair, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 23, 1966, Ser. No. 582,207
Int. Cl. C06d 5/06
U.S. Cl. 149—19 2 Claims

Propellant compositions which contain high nitrogen content binders are prepared by reacting liquid poly-secondary amines with perchlorates. Powdered aluminum may be added.

3,798,087

FAST BURNING COMPOSITE PROPELLANT

William E. Hill, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1969, Ser. No. 817,615
Int. Cl. C06b 11/00
U.S. Cl. 149—19 2 Claims

1-isopropenylcarborane is reacted with tetrafluorohydrazine to form NFIPC. NFIPC is a modifier to enhance the burning rates of composite propellants. When NFIPC is used to replace n- butylferrocene in a propellant formulation, a faster burning propellant with better physical properties results.

3,798,088

COCRYSTALLIZATION OF AMMONIUM PERCHLORATE AND STABILIZATION OF SOLID PROPELLANTS

Edward K. Lindsay, Cumberland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 5, 1973, Ser. No. 338,127
Int. Cl. C06b 11/00
U.S. Cl. 149—20 13 Claims

A method of improving the thermal stability of double-base propellants containing ammonium perchlorate (AP) by cocrystallization of AP with resorcinol before formation of the propellant grain. AP is dissolved in a solution of liquid ammonia; resorcinol is added to the solution. After evaporation and drying the resulting cocrystals are ground and, in the conventional manner, incorporated into a propellant matrix.

3,798,089

FUEL FOR A MAGNETO-HYDRODYNAMIC GENERATOR

Rainer Zeller, Munich, Germany, assignor to Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft, Munich, Germany

Filed Sept. 3, 1971, Ser. No. 177,876
Claims priority, application Germany, Sept. 4, 1970, 2043884
Int. Cl. C06b 15/00
U.S. Cl. 149—22 12 Claims

A fuel for a magneto-hydrodynamic generator in which readily ionizable seed material additives and power-increasing additives are suspended simultaneously in a liquid fuel carrier system whereby the suspension is stabilized in the form of a thixotropic gel by the addition of a suspension agent.

3,798,090

PROCESS FOR PRODUCING CROSS-LINKED PROPELLANTS

John C. Allabashi, Morristown, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 605,142, Dec. 22, 1966. This application Dec. 4, 1968, Ser. No. 781,284

Int. Cl. C06d 5/06

U.S. Cl. 149—19.4 10 Claims

Chemically modified double base propellant formulations containing a phenol-blocked diisocyanate as cross-liking agent are cross-linked by unblocking the diisocyanate during propellant cure. A typical formulation contains nitrocellulose, nitroglycerin, ammonium perchlorate or cyclotrimethylene trinitramine, aluminum and a prepolymer of polyglycoladipate and 2,4-tolylene diisocyanate.

3,798,091

GELLED CHROMIUM ACETATE CROSS-LINKED AQUEOUS SLURRY TYPE SALT EXPLOSIVES, AND MANUFACTURE

Herbert G. Knight, Jr., Succasunna, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 26, 1973, Ser. No. 345,161

Int. Cl. C06b 1/04

U.S. Cl. 149—60 13 Claims

Gelled aqueous slurry salt type explosives in which the gelation agent is guar gum crosslinked with a chromium acetate at pH levels lower than heretofore, viz, at 4.5–5.4, by crosslinking the guar gum in the pH range with a chromium acetate of the group of chromium hydroxy acetate, chromium triacetate, and mixtures thereof, in the presence of calcium nitrate which constitutes at least part of the oxidizer salt.

Heretofore, guar gum/chromium acetate gelation agents for the above explosives have been available only at higher pH levels with accompanying impairment of gel strength and stability, water resistance, viscosity characteristics, and stability of certain ingredients of the explosive.

3,798,092

LOW-TEMPERATURE LIQUID EXPLOSIVE COMPOSITION

Wallace F. Runge, Terre Haute, Ind., and Donald W. Edwards, Lehighton, Pa., assignors to Commerical Solvents Corporation, Terre Haute, Ind.

Filed Aug. 25, 1972, Ser. No. 283,861

Int. Cl. C06b 7/00

U.S. Cl. 149—89 4 Claims

A low-temperature liquid explosive suitable for use at −60° F or above comprising nitromethane and methylene chloride in a 7:3 ratio by weight and from about 2–12 percent diethylene triamine based on the weight thereof.

3,798,093

METHOD OF MAKING A LAMINATED FIBROUS STRIP

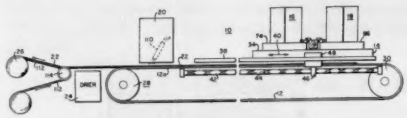
Samson P. Levine; Ralph W. Kugler; Anthony J. Candek, all of Pittsburgh, and Arthur H. Long, Jeannette, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 100,683, Dec. 22, 1970, Pat. No. 3,685,376. This application July 7, 1972, Ser. No. 269,690

Int. Cl. B26d 1/06

U.S. Cl. 156—62.2 7 Claims

A system for preparing an elongated laminated strip having a plurality of layers of metal fibers with the fibers of each layer being disposed at angles to the fibers of adjacent layers, including at least two fiber cutting shredders which are mounted on a movable carriage above a conveyor belt. The movable carriage travels back and forth over a short segment of travel of the conveyor belt and the shredders are rotatably mounted on the carriage for dropping successive layers of metal fibers onto the conveyor belt with the fibers of each layer being disposed at angles to each other. At the end of travel of the



carriage in each direction the shredders are rotated to different angles and the belt simultaneously moves a short increment of travel, whereby a continuous multiple layered strip of metal fibers is produced. At another work station on the belt an adhesive binder is applied to the strip so that upon leaving the belt the strip may be wound upon a reel for storage and handling.

3,798,094

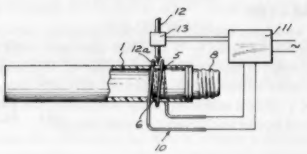
METHOD OF SECURING A CLOSURE MEMBER TO A PLASTIC CONTAINER

Allan Costa, 622 Udall Road, West Islip, N.Y. 11795

Continuation-in-part of abandoned application Ser. No. 827,944, May 26, 1969. This application Jan. 27, 1972, Ser. No. 221,211

Int. Cl. B29c 27/04

U.S. Cl. 156—69 5 Claims



The present invention relates to a method of air and liquid tight welding or fusing a closure member to a small cylindrical plastic container, particularly a thin-walled container as widely used for cosmetic and pharmaceutical flowable compounds. The invention further relates to a container produced in accordance with the method of the invention.

3,798,095

PROCESS FOR SPREADING A GRAPHITE FIBER TOW INTO A RIBBON OF GRAPHITE FILAMENTS

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

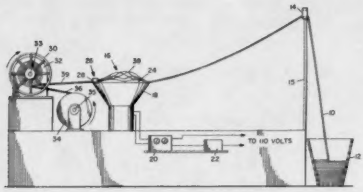
Original application Dec. 14, 1970, Ser. No. 97,988, now Patent No. 3,704,485. Divided and this application Sept. 13, 1972, Ser. No. 288,850

Int. Cl. B32b 31/16

U.S. Cl. 156—73 5 Claims

A process for spreading a graphite fiber tow into a mass of substantially individual graphite filaments is provided. Spreading of the filaments is achieved by vibrating the graphite tow in air pulsating at a frequency and in-

tensity sufficient to couple the energy of the pulsating medium to the graphite tow. Vibration of the tow in air



causes separation and spreading of the filaments in the tow.

3,798,096

PROCESS FOR FORMING PLASTIC PARTS HAVING SURFACES RECEPTIVE TO ADHERENT COATINGS

John J. Grunwald, New Haven, Eugene D. D'Ottavio, Thomaston, Harold L. Rhodenizer, Bethlehem, and Michael S. Lombardo, Waterbury, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

No Drawing. Original application Dec. 31, 1969, Ser. No. 889,472, now Patent No. 3,620,933. Divided and this application Nov. 9, 1971, Ser. No. 197,164

Int. Cl. B32b *15/08, 31/12;* C09J *5/02*

U.S. Cl. 156—151 **3 Claims**

Plastic parts are formed against an anodically treated aluminum surface by molding, laminating, etc., whereby the surface of the formed part after removal of or separation from the aluminum has a high energy level and is receptive to adherent coating of paint or metal plate. In particular, laminates of a thermoplastic resin and a sacrificial cladding of aluminum foil are prepared which, after subsequent stripping of the sacrificial metal cladding, exhibit unique surface properties enhancing the bonding thereto of paints, inks and plated metal deposits.

3,798,097

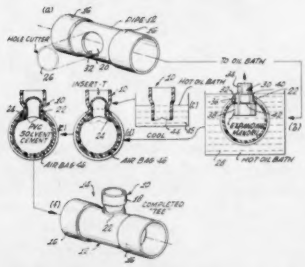
METHOD OF MAKING BRANCHED PLASTIC CONDUITS

Edward V. Mendenhall, P.O. Box 2026, Oxnard, Calif. 93030

Filed Mar. 23, 1972, Ser. No. 237,484

Int. Cl. B29c *17/00*

U.S. Cl. 156—152 **22 Claims**



A method of joining a plastic tube to the side of a plastic pipe to form a branched conduit by making a hole in the side of the pipe smaller than the tube, softening the area around the hole and expanding the hole to a size sufficient to receive one end of the tube while forming an upstanding flange around the hole, forming a radial lip on the end of the tube and bonding the tube to the pipe with the lip engaged with the inside of the pipe around the hole and the flange engaged around a portion of the outside of the tube. In one embodiment, a "T" conduit is formed by deforming the tube to form the lip while one end portion of the tube is in position in the hole, and in a second, the lip is formed prior to insertion of the tube in the hole. In a third embodiment, a "cross" conduit is formed by deforming the ends of two tubes in two axially aligned holes in the sides of the pipe.

3,798,098

PANEL HAVING EMBOSSED PRINTING PATTERN

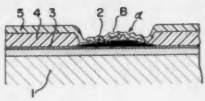
Yasumasa Ogawa and Seigo Nomiyama, Kitakyushu, Japan, assignors to Dantani Sangyo Kabushiki Kaisha, Kitakyushu-shi, Fukuoka-ken, Japan

Filed Apr. 6, 1972, Ser. No. 241,711

Claims priority, application Japan, May 19, 1971, 46/33,904

Int. Cl. B44f *7/00, 9/00*

U.S. Cl. 156—154 **9 Claims**



A process for finishing a surface of a panel to make a dressed surface having a three-dimensional pattern comprises printing a desired pattern on the surface of the panel with a printing ink containing a foaming agent which generates gases through reaction with a hardening agent in a transparent coating material subsequently applied thereon, subsequently applying a transparent coating material containing the hardening agent onto the entire printed surface to cause reaction of the hardening agent and the foaming agent thereby to foam and inflate the printed domains, and then after drying the coated layer grinding off a part of the foamed and inflated portions to form a three-dimensional concave pattern.

3,798,099

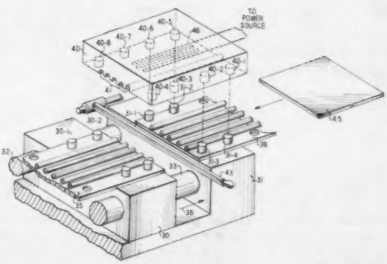
METHOD FOR SPLICING OPTICAL FILMS

Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 12, 1972, Ser. No. 262,002

Int. Cl. B65h *69/02, 69/06*

U.S. Cl. 156—158 **5 Claims**



An arrangement of optical fibers, apparatus and methods for splicing same, are described. The fiber arrangement comprises a plurality of fibers secured to a ribbon-

like tape. The fiber segments to be spliced are mounted on the slideable holders of a splicer such that each of the fibers of one segment are aligned approximately coaxially with a fiber on the other segment. The individual fibers are then cut, as required; moved into position; more accurately aligned by mechanical means; and then bonded together by the application of either heat or a bonding material of suitable refractive index. In one arrangement, accurate alignment of the fibers is obtained by means of a grooved cover plate which is placed over the adjacent ends of the fibers and left in position until the bonding step is completed. Various means for mounting the fiber segments in the splicer and for strengthening the splice are disclosed. A modified splicer for liquid core fibers is also described.

3,798,100

APPARATUS FOR MAKING SPUNBONDED FABRICS

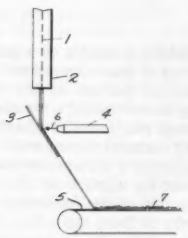
Charles Marchadier, Ecully, and Jean Togny, Saint-Foy-les-Lyon, France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Apr. 26, 1972, Ser. No. 247,874

Claims priority, application France, Apr. 26, 1971, 14,885

Int. Cl. D04h *3/00*

U.S. Cl. 156—167 **14 Claims**



A process for producing spunbonded nonwoven fabrics is disclosed, wherein continuous filaments of organic polymers are extruded, stretched to orient same, and then arranged in fabric form on a moving conveyor. The filaments are arranged or distributed on the moving conveyor by impact from a deflector surface, with a fluid jet operating upon the point of impact from a location in front of the point of impact in relation to the direction of the deflected filaments, and in the same plane as the axis of the filaments before and after impact with the deflector surface.

The spunbonded nonwoven fabrics produced by the disclosed process are more homogeneous than prior spunbonded non-woven fabrics, and are suitable for known uses of such fabrics, such as apparel backing, padding and the like.

3,798,101

LABELING METHOD

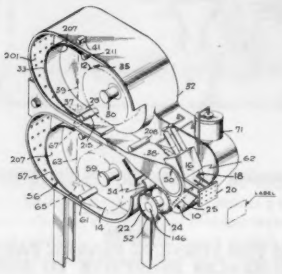
Herbert La Mers, Los Angeles, Calif., assignor to R. A. Jones & Company, Inc.

Application Nov. 13, 1970, Ser. No. 89,492, which is a division of application Ser. No. 756,651, Aug. 30, 1968, now Patent No. 3,661,625. Divided and this application Dec. 20, 1972, Ser. No. 316,909

Int. Cl. B29c *17/04;* B32b *31/00*

U.S. Cl. 156—212 **7 Claims**

Methods for applying labels to objects include the steps of engaging and detaching removable precut labels, supported within an elongated web, with a reciprocating plunger driven through the web, and applying a detailed label to an object with the same plunger. A resilient plunger is utilized to successively resiliently engage, detach and apply labels to objects and detached labels are held on the plunger for a predetermined time. Before labels are detached from the web, the web is drawn through a station where a tacky surface is established on one side of the labels.



3,798,102

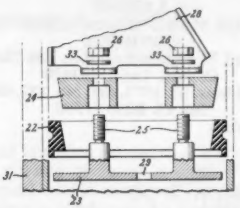
METHOD OF SEALING THE TIP END OF A HELICOPTER ROTOR BLADE SPAR

Joseph J. Penyak, Ridley Park, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1971, Ser. No. 169,286

Int. Cl. B29c *27/00, 27/30;* B64c *11/16;* F03b *3/12*

U.S. Cl. 156—214 **4 Claims**



There is disclosed a method of sealing a closure to a container or similar object. As a specific application there is described the method of sealing the tip end of a helicopter rotor blade spar. At the spar tip end there is provided a bulkhead comprising a backing plate and a wedge plate joined together by bolts and conforming to the shape of the spar interior. Surrounding the edges of the bulkhead is the sealant. Prior to inserting the bulkhead and sealant into the spar, the sealant is semi-cured from a liquid state to a molded solid state whereby it can be fitted about the bulkhead plates. After the bulkhead is located in place in the spar, the sealant is further cured to seal the area between the spar and bulkhead. The two-step process of semi-curing the sealant and then finally curing in the sealed position is unique to this invention.

3,798,103

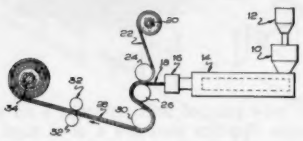
LAMINATING INCOMPATIBLE POLYSTYRENE AND VINYL CHLORIDE OR ACRYLIC PLASTIC SHEETS

Thomas Norman Gaunt, 179 Wetherby Road, Leeds 17, Yorkshire, England

Continuation-in-part of abandoned application Ser. No. 823,986, May 12, 1969. This application Feb. 25, 1972, Ser. No. 229,347

Int. Cl. B29b 1/04

U.S. Cl. 156—244 4 Claims



Laminating polystyrene sheet and a synthetic plastics material lining sheet which is highly impermeable to gases and is incompatible with the polystyrene, and thermoforming containers in the laminate, removing them from the laminate and separating the skeletel wastes of the polystyrene and lining sheet for re-use. The satisfactory bonding between the polystyrene and lining sheet is achieved by extruding one or both of the sheets and bring the sheets together under pressure and cooling while the or each extrudate is still soft. The lining sheet is suitably polyvinyl chloride, copolymer of polyvinyl chloride or high barrier acrylic thermoplastic material.

3,798,104

GAS ACTIVATED BONDING OF UNDRAWN POLYAMIDE ARTICLES

William C. Mallonee, Atlanta, and Henry E. Harris, Savannah, Ga., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 1,477, Jan. 8, 1970, which is a continuation-in-part of application Ser. No. 737,507, May 17, 1968, now Patent No. 3,516,900, which in turn is a continuation-in-part of abandoned application Ser. No. 528,699, Feb. 16, 1966. This application Dec. 2, 1971, Ser. No. 203,957

Int. Cl. B29d 27/08; C09j 5/02

U.S. Cl. 156—306 5 Claims

Touching polyamide shaped structures, such as granules, products of extrusion and the like are autogenously bonded together along their contiguous surfaces by the absorption and subsequent desorption of an activating gas such as a hydrogen halide to form products including porous pellicles, substantially seamless articles and the like.

3,798,105

METHOD OF JOINING A PART TO A MATRIX MATERIAL

Clifford George Hannah, Alvaston, Reginald Shuttleworth, Ravenshead, and Alan David McCroft, Chaddesden, England, assignors to Rolls-Royce Limited, Derby, England

No Drawing. Filed May 14, 1971, Ser. No. 143,594

Claims priority, application Great Britain, May 14, 1970, 23,374/70

Int. Cl. B32b 7/10; C09j 5/02

U.S. Cl. 156—307 8 Claims

Articles to be joined together, such as metal sheets or carbon fibers, are first coated with a primer coating of a tough thermoplastic resin material as a polysulphone, then a matrix material such as an epoxy resin is applied to the coated part and the matrix-primer coated part is brought together with another part, optionally similarly prepared, with pressure and heat, causing the resin to cure and an interdiffusion between the thermoplastic and the matrix material. Parts so joined together have bonds of improved strength, stronger, for example, than when the same matrix material is used but without the primer.

3,798,106

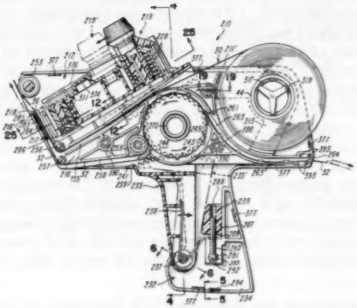
LABEL PRINTING AND APPLYING APPARATUS

William A. Jenkins, Englewood, and Paul H. Hamisch, Jr., Franklin, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Dec. 8, 1971, Ser. No. 205,854

Int. Cl. B32b 31/00

U.S. Cl. 156—384 14 Claims



There is disclosed label printing and applying apparatus by which labels are successively printed and applied to merchandise. The apparatus feeds pressure sensitive labels mounted on a web of supporting material to a printing zone and to a delaminating zone. An applicator disposed downstream of the delaminating zone is used to apply the labels to merchandise.

3,798,107

LAMINATING APPARATUS

William Townsend Bright, 1029 Webster Road, Summersville, W. Va. 26651

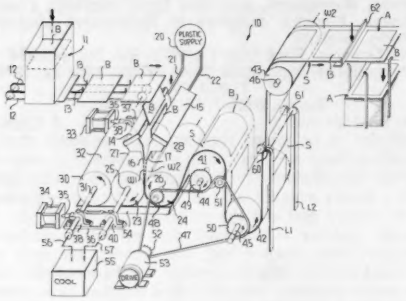
Filed Aug. 23, 1971, Ser. No. 174,029

Int. Cl. B29b 5/00

U.S. Cl. 156—500 4 Claims

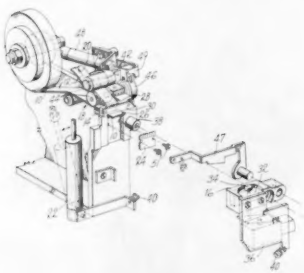
This disclosure relates to a laminating apparatus including means for extruding a pair of hot plastic webs between which is sandwiched sheets of paper stock material thus forming a sandwich web structure which when transversely severed forms table place mats or the like, the apparatus further including resilient and rigid surfaced rolls between which the sandwich web structure is

fed, and means for moistening an exterior surface of the resilient roll. The apparatus further includes means for



maintaining the resilient and rigid rolls at respective temperature ranges of 70° F.–90° F. and 90° F.–110° F.

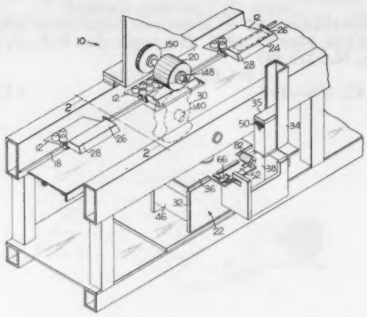
3,798,108
APPARATUS FOR DISPENSING TAPE
Joseph R. Ioannilli, Beverly, Mass., assignor to USM Corporation, Boston, Mass.
Filed Dec. 20, 1971, Ser. No. 209,939
Int. Cl. B32b *31/00*; B26d *7/06*
U.S. Cl. 156—510 **4 Claims**



An apparatus for dispensing tape comprises means for feeding the tape having the backing temporarily attached to a separator which separates the tape from the backing. The tape is then directed toward a dispensing area portion of the apparatus and the backing is fed into means for pulling the backing. The pulling means are then activated to feed tape onto the dispensing portion of the apparatus and cutting means are activated to cut a piece of the tape on the dispensing portion for use.

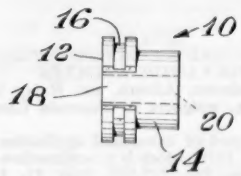
3,798,109
APPARATUS FOR APPLYING CUT LABELS TO OBJECTS
Donald R. Gamroth, New Berlin, Wis., assignor to Condes Corporation, Milwaukee, Wis.
Filed Apr. 17, 1972, Ser. No. 244,406
Int. Cl. B65c *9/10*
U.S. Cl. 156—568 **11 Claims**

Apparatus is shown for gluing cut labels to the inside under-surface of a container while printing is simultaneously being applied to an opposite outside upper surface by a printing roller. The apparatus comprises a vertical magazine containing a stack of cut labels; a rotating indexing table; stripper and insertion means for removing labels one-at-a-time from the magazine and for placing them on the table while the table is in one position; and impression roll means for removing a label from the table after the table has rotated to another position and for applying the label to the inside surface of the container.



As the label is being moved by the impression roll, glue is automatically sprayed on a portion of the reverse side thereof.

3,798,110
ROTARY SEALING ROLLER
Leo J. Von Gunten, Akron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 15, 1971, Ser. No. 208,228
Int. Cl. B21b *27/00*; B32b *31/00*
U.S. Cl. 156—582 **2 Claims**

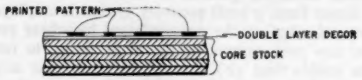


A rotary sealing roller employed in wrapping apparatus, said roller providing heat softening of a wax or adhesive on a tear strip ribbon just prior to the same being combined with wrapping material. The roller comprises a thin heated roller having a groove disposed circumferentially around the outer edge and a recess disposed on the outer periphery thereof. The groove provides straight line lateral alignment of the ribbon on the roller at high speeds. The recess prevents heat softening of the wax or adhesive on the ribbon over a short span of its length disposed adjacent to and overlapping the ends of individual wrappers cut from the wrapping material.

3,798,111
MULTIPLE LAYER DECORATED PAPER, LAMINATES PREPARED THEREFROM AND PROCESS
William C. Lane, Chillicothe, Ohio, and Donald E. Moffatt, Lee, Mass., assignors to The Mead Corporation, Dayton, Ohio
Continuation-in-part of abandoned application Ser. No. 147,839, May 28, 1971. This application Mar. 24, 1972, Ser. No. 237,952
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **12 Claims**

A decorated multiple layer paper suitable for use as a top surface in resin impregnated abrasion resistance deco-

rated laminates, and the laminates prepared therefrom, said multiple layer having a base layer and a top layer, the top layer comprising abrasion resisting mineral particles having a hardness of 7 or more on the Moh scale and a particle size ranging from 10 to 75 microns, and with a printed pattern over the exposed surface of the top layer. The multiple layer paper is made by depositing a



base layer on a paper machine forming wire, and while the base layer is in a wet state and still supported on the forming wire, depositing the top layer thereover. Abrasion resistant decorative laminates are prepared from said decorated multiple layer paper by saturating said paper with a resin, suitably a thermosetting resin followed by uniting with a core and curing of said resin.

3,798,112
COMBINED STAIN RETARDANT AND SEPARATOR INTERLEAVING MATERIAL FOR GLASS SHEETS

William J. Hay, Jr., Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Original application Dec. 18, 1970, Ser. No. 99,500, now Patent No. 3,723,312. Divided and this application Aug. 10, 1972, Ser. No. 279,417
Int. Cl. B32b *17/06;* **F16k** *31/00*
U.S. Cl. 161—162 **3 Claims**

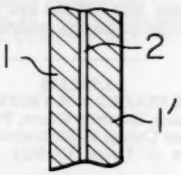
Sheets of glass are packaged, using in place of interleaving paper a dedusted agglomerated salicylic acid or a mixture of dedusted agglomerated salicylic acid and inert separator material, such as polystyrene beads. A novel method for agglomerating the acid is disclosed with the resulting salicylic acid agglomerated with polyethylene oxide and comprising substantially spherical particles less than about 30 mesh and having only a minor portion less than about 200 mesh. In accelerated staining tests agglomerated salicylic acid protects against staining slightly less than interleaving paper with its high application cost; agglomerated salicylic acid may be applied to sheets of glass with application costs on the order of those for applying wood flour or Lucite, which have extremely limited or negligible stain-retardant qualities, and this agglomerated material prevents surface scratching better than interleaving paper and nearly as an inert spherical separator.

3,798,113
LAMINATED WINDSHIELD STRUCTURE

Joji Suzuki and Keihachiro Tanaka, Hyogo-ken, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Application June 6, 1971, Ser. No. 153,888, which is a continuation of abandoned application Ser. No. 780,419, Dec. 2, 1968. Divided and this application Aug. 9, 1971, Ser. No. 170,154
Claims priority, application Japan, Dec. 7, 1967, 42/78,813
Int. Cl. B32b *5/14, 17/10*
U.S. Cl. 161—164 **5 Claims**

A laminated windshield structure has at least two transparent glass sheets and at least one interlayer of an organic polymeric material interposed between the glass sheets and bonded thereto to provide a unitary structure. At least one of said glass sheets has at least one surface with a Li^+ ion concentration higher than that of the interior of the glass sheet and a Na^+ ion concentration lower than that of the interior of the glass sheet. The one glass



sheet is under a tensile stress for giving said glass sheet a reduced impact strength lower than the normal impact strength of a glass sheet of the same thickness and size.

3,798,114
GLASSES WITH HIGH CONTENT OF SILVER OXIDE

Theodor L. Chvatal, Vienna, Austria, assignor to Owens-Illinois, Inc., Toledo, Ohio

No Drawing. Filed May 11, 1971, Ser. No. 142,336
Int. Cl. B32b *15/04*
U.S. Cl. 161—191 **2 Claims**

Glasses having a high content of silver oxide are described. Generally these glasses contain at least 20%, and up to as high as 70% silver oxide expressed as Ag_2O. The glasses also contain a metal oxide of one of the metals, vanadium (V), tungsten (W), molybdenum (Mo), uranium (U) or manganese (Mn), and an oxide of one of the metalloids; viz. boron (B), phosphorous (P), germanium (Ge), arsenic (As), antimony (Sb), bismuth (Bi) or tellurium (Te). Alternatively, the glass may contain in addition to the Ag_2O component, a mixture of oxides of the above transition elements. The glasses are produced by forming a melt using silver in the form of $AgNO_3$ to thereby enable formation of glasses which may have considerable quantities of Ag_2O without precipitating the silver out in the metallic form. The glass compositions are characterized by low melting and low softening temperatures, high density, high refractive index, good infrared transmission characteristics and water resistance. Uses for the glasses include fiber optics, condensers, and glazes for substrates for microelectronic circuits.

3,798,115
LAMINATES OF POLYPROPYLENE AND POLYAMIDE

Alfred Hofmann, Bobenheim-Roxheim, and Hans-Peter Weiss, Altrip, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,646
Int. Cl. B32b *27/32, 27/34*
U.S. Cl. 161—227 **1 Claim**

Improvement in sandwich-type polypropylene/polyamide laminates consisting of a layer of a mixture of polypropylene (PP) and polyamide (PA) (layer 2) sandwiched between outer layers 1 and 3 of polypropylene and polyamide respectively. The improvement consists in that

(α) the polypropylene (PP) used is a specific mixture of

(a) a polypropylene of which less than 1% by weight is soluble in boiling toluene and

(b) a polypropylene of which more than 99% by weight is soluble in boiling toluene, provided that the polypropylenes (a) and (b) have (substantially) the same intrinsic viscosities, (substantially) the same molecular weight distributions and specific intrinsic viscosities (η), and

(β) the polyamide (PA) is a polycaprolactam having a specific viscosity and specific melting point.

The laminates of the invention have improved permeability to water vapor, relatively low permeability to oxygen and relatively high stiffness and are therefore particularly suitable for packaging foodstuffs.

3,798,116

HEAT SEALED POLYESTER FILM

Howard D. Bassett, Downers Grove, Franklin E. Schrage, Flossmoor, and George F. Kirkpatrick, Downers Grove, Ill., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,277
Int. Cl. B32b *7/02*; F16l *11/00*
U.S. Cl. 161—231 5 Claims

A flexible heat set biaxially oriented film article having in at least one portion thereof a bead type heat seal which is prepared by clamping together adjacent the portion to be heat sealed, superimposed plies of a heat set, biaxially oriented polyester film, said film being characterized as having a tensile strength of at least 15,000 p.s.i. and a ratio of tensile strengths in the TD to MD direction between about .67 and 1.5, imposing a heat energy source to fuse in a bead type seal the superimposed film and maintaining the plies of film pressed together until the source of heat energy is retracted therefrom.

3,798,117

LAMINATE COMPRISING PIGMENTED MELAMINE RESIN MODIFIED NITRILE RUBBER IMPREGNATED BASE AND SUPERIMPOSED FILM

Alfred Thomas Guertin, Ronald James Keeling, and Walter William Schiermeier, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,043
Int. Cl. B32b *27/42*
U.S. Cl. 161—251 7 Claims

A decorative laminate comprising a heat and pressure consolidated assembly comprising in superimposed relationship at least one dried paper base sheet impregnated with a pigmented mixture of a nitrile rubber latex and a water dispersible melamine-formaldehyde resin surfaced with a thermoplastic film back-printed with a design thereby rendering the film translucent or a thermoplastic film pigmented so as to render it translucent.

3,798,118

HOT MELT ADHESIVE FORMULATION

Faber B. Jones, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Continuation-in-part of application Ser. No. 100,294, Dec. 21, 1970, which is a continuation-in-part of application Ser. No. 614,413, Feb. 7, 1967, which in turn is a continuation-in-part of application Ser. No. 580,194, Sept. 19, 1966, all now abandoned. This application June 6, 1972, Ser. No. 260,214
Int. Cl. C08f *45/30, 45/52*
U.S. Cl. 161—245 10 Claims

Hot melt adhesive compositions with superior resistance to high temperature loss of strength are prepared from conventional ingredients including resin tackifiers and waxes plus a high melt flow resinous polymer of propylene The adhesive formulations can contain about 20 to 90 weight parts of substantially crystalline resinous propylene polymer which includes homopolymers of propylene, and copolymers of ethylene and propylene and 10 to 80 weight parts of resin tackifier and optionally a proportion of wax per 100 parts of total adhesive formulation. The compositions can be used as sealants or adhesives in producing laminates which can then be exposed to boiling water or steam without adhesive failure.

3,798,119

PROCESS FOR BLEACHING KRAFT PULP WITH OXYGEN IN THE PRESENCE OF WHITE LIQUOR FROM A KRAFT RECOVERY SYSTEM

Rudra P. Singh, Ridley Park, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,119
Int. Cl. D21c *9/10*
U.S. Cl. 162—65 5 Claims

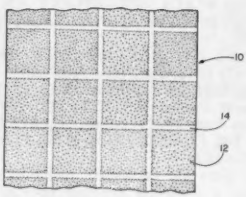
An improved method of bleaching kraft pulp in an oxygen-based bleaching process is disclosed in which (a) white liquor from a kraft recovery system is employed as a source of alkali in the oxygen-based bleaching process without any pretreatment of the white liquor to remove sodium sulfide and (b) the effluent from the oxygen-based bleaching process is recycled directly to the kraft recovery system.

3,798,120

DISPOSABLE TISSUE WITH CONTROLLED WET BREAK-UP

Kenneth M. Enloe, Neenah, and James T. Gresham, Hortonville, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 11, 1972, Ser. No. 243,022
Int. Cl. D21h *5/02*
U.S. Cl. 162—112 12 Claims



Absorbent tissue webs structured to control wet breakup and designed especially for disposal in recirculating toilets. Selectively spaced areas of the tissue are treated with a wet strength chemical which strongly binds the fibers to each other in the selected areas to prevent wet disintegration of these areas. The wet strengthened areas comprise a multiplicity of closely spaced patches of predetermined size arranged to cover the major portion of the total web area. These patches are separated by narrow web portions substantially free of binder. When sheets of the thus treated tissue web are deposited in the aqueous system of a recirculating toilet and subjected to circulatory action of the aqueous fluid therein, the narrow web portions quickly weaken and rupture. The major areas of the sheets represented by the wet-strengthened patches are dispersed in the water as small individual patches which retain their integrity and approximate size. The narrow unbonded web portions break up into individual component fibers but these fibers represent only a minimal part of the total fibers in the web.

3,798,121

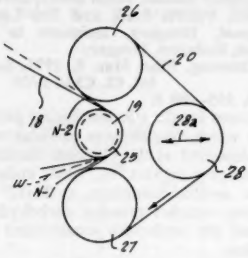
WRAPPED ROLL PRESS

Leroy H. Busker, Rockton, and Carl J. Francik, Roscoe, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Oct. 28, 1971, Ser. No. 193,272
Int. Cl. D21f *3/06*
U.S. Cl. 162—205 12 Claims

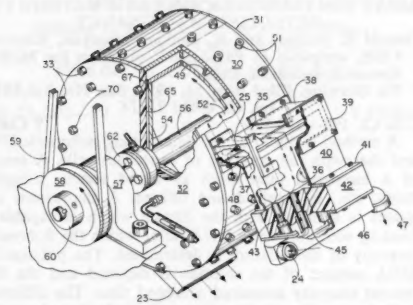
An apparatus and method for forming a fibrous web and particularly for removing water therefrom by a compressing action which includes passing the web over a portion of the outer surface of a revolving roll and applying a belt to the outer surface to define a pressing zone

in which the web is pressed due to the linear tension on the belt with a felt or other means passed through the pressing zone to receive water pressed from the compacted web and the belt being imperforate and equal



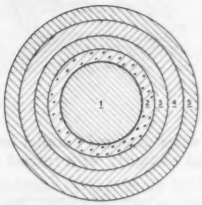
atmospheric pressures existing on both sides of the pressing zone so that the water is expressed solely by the application of mechanical pressure which is at least as great as 100 pounds per square inch.

3,798,122
METHOD AND APPARATUS FOR THE PRODUCTION OF FIBROUS SHEETS
David W. Appel, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation-in-part of application Ser. No. 798,409, Feb. 11, 1969. This application June 26, 1972, Ser. No. 266,075
Int. Cl. D21l *1/00*
U.S. Cl. 162—315 **5 Claims**



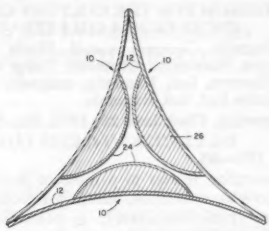
An apparatus arrangement and method for the generation of a fiber containing foam and the draining of the foam substantially immediately following its formation is disclosed. The draining on a foraminous support commences within about 100 milliseconds of the termination of the action which generates the foam. The conveying of the foam from the generation zone to the foraminous support is such that the fibers are not significantly changed in their orientation by movement to the foraminous support. The foam is formed in a wide, thin ribbon so that lateral spreading of the foam to attain sheet width is not necessary.

3,798,123
NUCLEAR FUEL FOR HIGH TEMPERATURE GAS-COOLED REACTORS
Terrence B. Lindemer, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 16, 1972, Ser. No. 235,206
Int. Cl. G21c *3/06, 3/20*
U.S. Cl. 176—67 **8 Claims**



A method of controlling fuel failure within a nuclear reactor by providing a novel fuel particle which maintains a total carbon monoxide and carbon dioxide partial pressure of less than $10^{(6.8-13{,}300/T^{\circ}\,K.)}$ atmospheres at temperatures above 1350° K.

3,798,124
FUEL SUBASSEMBLY FOR NUCLEAR REACTOR
Richard C. Noyes, Hartford, Conn., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed May 27, 1969, Ser. No. 828,269
Int. Cl. G21c *3/06, 3/32*
U.S. Cl. 176—76 **4 Claims**

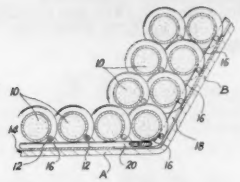


A circular cylinder nuclear fuel subassembly having extended circumferentially spaced containers of moderating material along the outer periphery to permit a plurality of subassemblies to be assembled in contact with each other and the containers occupying the spaces between the subassemblies.

3,798,125
NUCLEAR FUEL SUBASSEMBLY
Jean Skok, Aix-en-Provence, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Nov. 16, 1971, Ser. No. 199,104
Claims priority, application France, Nov. 20, 1970, 7041794
Int. Cl. G21c *3/08, 3/32*
U.S. Cl. 176—78 **5 Claims**

A nuclear fuel assembly for a liquid metal cooled fast reactor comprises a bundle of fuel pins in a shroud. Each pin carries a helical spacer fixing the minimum spac-

ing between each pin and the adjacent pins or the shroud. Localized head losses along the lateral subchannels are



produced by wires disposed parallel to the inner wall of the shroud and obliquely with respect to the axes of the pins.

3,798,126

FISH PROTEIN ISOLATE

Rupert Josef Gasser, Kempttal, Grafstal, and Lienhard Bodo Huster, Winterthur, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed Sept. 10, 1971, Ser. No. 179,586

Claims priority, application Great Britain, Sept. 23, 1970, 45,311/70

Int. Cl. C12b *1/00*

U.S. Cl. 195—5 **19 Claims**

Protein is isolated from fish material (e.g. fish meal, raw fish, fish offal) by solubilization with alkali and the lipids present in the fish are removed by liquid-liquid extraction with one or more solvents.

3,798,127

MEDIUM FOR THE CULTURE OF THE *ESCHERICHIA COLI* STRAIN

Maria Dogariu, Georgeta Alupei, Maria Verdes, Gaby Friedman, Escaterina Grumeza, Tudor Cobzariu, and Ligia Ionescu, Iasi, Rumania, assignors to Fabrica de Antibiotice Iasi, Iasi, Rumania

No Drawing. Filed June 20, 1972, Ser. No. 264,496

Int. Cl. C12b *3/14*; C12d *13/10*

U.S. Cl. 195—65 **6 Claims**

The invention relates to a medium for the culture of the *Escherichia coli* strain, which is a producer of penicillinacylase (penicilliamidase), a penicillin-splitting enzyme. This medium contains urea in an amount of 0.1 to 1% by weight as a nitrogen source and lecithin in an amount of 0.01 to 0.05% by weight as a promoter of the process for formation of the penicillinacylase enzyme.

3,798,128

METHOD FOR THE PRODUCTION OF GRANULAR ENZYME PREPARATION

Shinpei Minato, Hyogo, Jisaku Goto, Osaka, and Kiyoshi Katagiri and Hiromi Nakatani, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,493

Claims priority, application Japan, Apr. 8, 1970, 45/29,896

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 **4 Claims**

The present invention relates to an improved process for producing a granular enzyme preparation which comprises blending an aqueous enzyme solution and water soluble salt with a hydrophilic organic solvent at specific concentration and temperature. The advantages of the process include improved ease of handling, safety and uniformity of product.

3,798,129

PROCESS FOR PRODUCING PARVULINES

Eva Toth-Sarudy, Istvan Horvath, Jozef Gyimesi, Istvan Ott, Laszlo Alfoldi, Janos Berdy, Istvan Koczka, Vilma Scholtz, Valeria Szell, and Eva Laszio nee Tomori, Budapest, Hungary, assignors to Gyogyszerkutato Intezet, Budapest, Hungary

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,173

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **5 Claims**

A process for the microbiological production of parvulines, in which *Streptomyces parvulus* var. *parvuli* NRRL 5740 (deposited at the National Health Institute, Budapest, Hungary on Oct. 31, 1967, under No. 36) is cultured at aerobic conditions, at 24–32° C. in a medium containing complex proteins, carbohydrates and mineral salts, and the antibiotics accumulated are recovered by extraction.

3,798,130

PYRROLINE BASED COMPOUNDS

Carolina Coronelli, Giangualberto Gallo, and Graziella Beretta, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Original application Jan. 28, 1971, Ser. No. 110,755, now Patent No. 3,737,439. Divided and this application Nov. 7, 1972, Ser. No. 304,355

Int. Cl. C12k *1/00*

U.S. Cl. 195—80 R **4 Claims**

A 1-pyrroline-2-acrylamide, which is suitable for use as an antibiotic (herein referred to as pyracrimycin A) is produced by cultivation of *Streptomyces eridani* n. sp. ATCC 21619 and can be isolated from the fermentation medium by extraction. The antibiotic substance is active against various Gram-positive and Gram-negative bacteria. The dihydro derivative of 1-pyrroline-2-acrylamide is also disclosed.

3,798,131

ASSAY FOR POLYMERIC DNA AS A METHOD FOR DETECTING MALIGNANCY

Donald E. Rounds and K. Sankara Narayan, Altadena, Calif., assignors to Pasadena Foundation for Medical Research, Pasadena, Calif.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,881

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **7 Claims**

A method is disclosed for determining polymeric DNA and therewith the presence of cancerous cells. A sample of a biological fluid, such as blood serum, irrigation fluids, etc., is obtained and filtered. A fluorescent substance is admixed with the filtrate which is capable of binding with polymeric DNA, after which the fluorescent intensity of the mixture is determined. The polymerized DNA content of the solution is digested and the fluorescent intensity measured a second time. The difference in the two readings indicates quantitatively the polymerized DNA present, which has been found to be an indication of the presence of cancerous cells.

3,798,132

BUTADIENE RECOVERY PROCESS

Dante H. Sarno, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

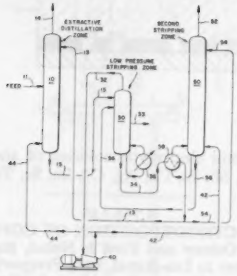
Filed Mar. 29, 1971, Ser. No. 129,086

Int. Cl. B01d *3/40*; C07c *7/08*

U.S. Cl. 203—53 **3 Claims**

A process for separating butadiene from mixtures of butadiene and C_4 unsaturates in an extractive distillation of the mixture in the presence of a polar solvent and recovering the butadiene from the fat solvent mixture is

disclosed. The butadiene-containing hydrocarbon mixture is introduced to the intermediate portion of an extractive distillation zone wherein it is contacted with the polar solvent which flows downwardly in the zone. In this manner butadiene is recovered in the fat solvent from the bottom of the extractive distillation zone. This fat solvent is introduced to a first stripping zone operated at a pressure lower than the extractive distillation



zone where the butadiene is stripped from the solvent. The butadiene-rich vapor from this first stripping zone is then compressed to a pressure higher than that of the extractive distillation zone. A portion of the compressed vapor is returned to the bottom portion of the extractive distillation zone and butadiene is recovered from the remaining portion of the compressed vapor in a second stripping zone.

3,798,133

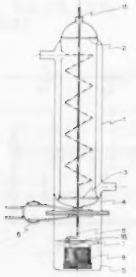
EXTRACTOR ASSEMBLY

Edward L. Randall, 8615 Erinbrook Way, Sacramento, Calif. 95826

Filed Oct. 18, 1971, Ser. No. 190,064

Int. Cl. B01d *11/02*

U.S. Cl. 203—99 **9 Claims**



Apparatus as a new and improved extractor assembly for consecutive hot solvent extraction, vapor and vapor condensate extraction.

3,798,134

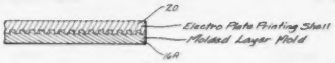
METHOD OF MAKING AN ELECTROTYPE SHELL

James A. Hynes, Winnetka, Ill., assignor to Printing Plate Supply Co., Chicago, Ill.

Filed Nov. 15, 1971, Ser. No. 198,955

Int. Cl. B41m *5/02*; B51c *3/08*

U.S. Cl. 204—6 **8 Claims**



An electrotype printing shell is made by first making a negative film of the subject matter to be printed and then making a positive master of a photopolymer photosensitive material from the negative film. A soft, flowable polymer material is then spread over the positive master and the liquid material is then polymerized such that a thin molded layer is formed on the positive master. The thin molded layer is then removed and sensitized followed by electroplating a printing shell material on the sensitized molded layer functioning as a mold. Lastly, the printing shell is removed from the molded layer mold.

3,798,135

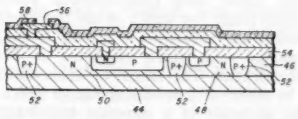
ANODIC PASSIVATING PROCESSES FOR INTEGRATED CIRCUITS

Ronald C. Bracken, James G. Harper, and Arnold D. Paddock, Dallas, and Wilson G. Morrison, Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 3, 1972, Ser. No. 249,807

Int. Cl. C23b *5/48*; H01l *11/00*

U.S. Cl. 204—15 **12 Claims**



Anodic oxidation is employed in the fabrication of integrated circuits to provide passivation and protection from abrasion. In one aspect of the invention the anodized passivating layer is selectively etched to expose bonding pads and scribe line areas. In a different aspect of the invention, a method for fabricating a multilevel interconnected integrated circuit is provided wherein a layer of anodic oxide is formed to cover the first level of interconnects. A layer of insulating material is then deposited over the anodic oxide layer to advantageously reduce interlevel capacitance. First level bonding pads and scribe line areas are exposed. A conductive layer is then deposited and patterned to form the second level interconnect pattern. This second level interconnect may also be protected by an anodic oxidation overlayer, if desired.

3,798,136

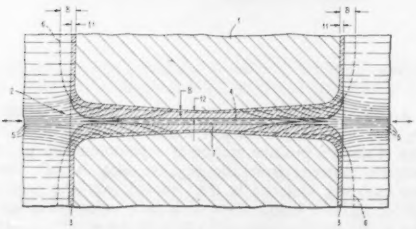
METHOD FOR COMPLETELY FILLING SMALL DIAMETER THROUGH-HOLES WITH LARGE LENGTH TO DIAMETER RATIO

Judith D. Olsen, South Salem, and Lubomyr T. Romankiw, Briarcliff Manor, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 9, 1972, Ser. No. 261,459

Int. Cl. C23b *5/48, 5/56*

U.S. Cl. 204—15 26 Claims



A method and apparatus for plating through large length to diameter ratio holes in a substrate is disclosed. The method consists of forming holes in a substrate which are tapered either by electron beam, or laser drilling, or by forcing an appropriate etchant through a previously drilled hole. The substrates may be of any material and can be either insulating or conductive. In the instance of the former, the substrate should be of such a character that it is amenable to electroless plating or other surface metallizing techniques. After metallizing the tapered hole where the substrate is conductive, the interiors of the tapered holes are electroplated while simultaneously subjecting the tapered portion to agitation by forced convection. Using a prior art plating solution of high throwing power, and forcing it through the tapered holes from the large end toward the small end, causes relatively high deposition rates at the widest portion of the taper which gradually decrease along the length of the taper until the narrow portion is reached where the minimum deposition rate occurs. Under such circumstances, plating occurs non-uniformly along the length of the taper such that the tapered holes are substantially closed without leaving large, unwanted voids which contribute to poor conductivity characteristics. The length of holes which may be filled can be doubled by providing a taper which decreases toward the midpoint of a substrate and from there increases in size until the opposite side of the substrate is reached. Using the same electroplating solution of high throwing power, plating through holes of this character can be accomplished while periodically reversing the direction of flow through the "double taper" holes.

Apparatus for carrying out the above described method consists of an enclosed chamber having inlet and outlet ports through which plating solution under pressure can be forced. Anodes consisting of wire mesh are disposed adjacent to both the inlet and outlet ports while an element containing holes which are to be plated-through forms the cathode and is disposed intermediate the anodes. Where a single taper is used, electroplating solution is forced in one direction but, where a "double taper" is utilized, the flow of electroplating solution is periodically reversed. The method and apparatus of the present invention provides completely plated through-holes which have a length to diameter ratio in excess of 25 and, in addition, have extremely good conductivity characteristics.

3,798,137

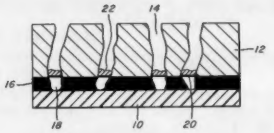
DIRECT CURRENT PIGMENTING OF ANODIZED ALUMINUM

William P. Kampert, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 22, 1972, Ser. No. 237,179

Int. Cl. C23b *9/02*

U.S. Cl. 204—35 N 7 Claims



Direct current electrolytic coloring of anodized aluminum with As, Sb, Bi, Cu, Ag, Cd, Sn, Se, Te and Tl.

3,798,138

ELECTRODEPOSITION OF COPPER

Barnet D. Ostrow and Fred I. Nobel, Roslyn, N.Y. assignors to Lea-Ronal, Inc., Freeport, N.Y.

No Drawing. Continuation of application Ser. No. 790,854, Jan. 13, 1969, which is a continuation-in-part of application Ser. No. 469,323, July 2, 1965, both now abandoned. This application July 21, 1971, Ser. No. 164,893

Int. Cl. C23b *5/20, 5/46*

U.S. Cl. 204—52 R 19 Claims

Copper is electrodeposited from an aqueous acid plating bath or solution containing at least one copper salt, a heterocyclic sulphur-nitrogen organic compound, such as water soluble derivatives of 2-thiazolidinethiones, 2-imidazolidinethiones or their reaction products with alkyl aldehydes or dialdehydes, and a water soluble brightener containing a carbon-sulphur group in which the carbon atom is attached to at least one other hetero-atom, such as sulphur or nitrogen.

3,798,139

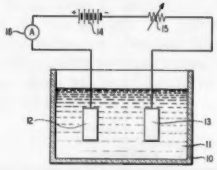
ELECTROLYTIC OXIDATION OF GALLIUM CONTAINING COMPOUND SEMICONDUCTORS

Bertram Schwartz, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of abandoned application Ser. No. 207,052, Dec. 13, 1971. This application Sept. 25, 1972, Ser. No. 292,127

Int. Cl. C23b *11/00*

U.S. Cl. 204—56 R 28 Claims



Electrolytic oxidation systems are described for growing an amorphous oxide layer on the surface of a gallium containing compound semiconductor. The electrolyte comprises either H_2O adjusted to an acidic or basic pH range or an H_2O_2 solution. Utilizing these systems, oxide thicknesses of greater than 1000 angstroms can be grown in relatively short periods of time.

3,798,140

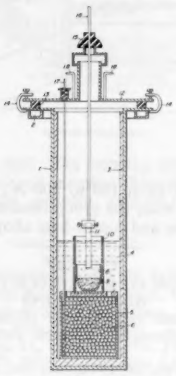
PROCESS FOR PRODUCING ALUMINUM AND SILICON FROM ALUMINUM SILICON ALLOYS

Thomas A. Sullivan, Eben L. Singleton, and Morris L. Johnson, Boulder City, Nev., assignors to the United States of America as represented by the Secretary of the Interior

Filed Feb. 1, 1973, Ser. No. 328,826

Int. Cl. C01b *33/02*; C22d *3/12*

U.S. Cl. 204—67 10 Claims



Aluminum–silicon alloy produced, for example, by smelting aluminum-silicate ore, is employed as the anode in electrolysis in a molten salt electrolyte of

$$NaCl—KCl—AlCl_3$$

or NaCl—KCl—AlF_3. Molten aluminum is produced at the cathode. Anode residue is acid leached to produce metallurgical grade silicon.

3,798,141

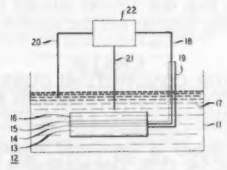
TECHNIQUE FOR ELECTROETCHING THIN FILM METALLIZATION

Joseph Yahalom, Maplewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 19, 1972, Ser. No. 298,856

Int. Cl. C23b *3/02*

U.S. Cl. 204—129.43 7 Claims



Pattern delineation of thin film metallizations including gold, platinum and rhodium is effected electrolytically in the presence of a strong acid having a pH less than one. The described technique permits controlled etching of noble metals which heretofore have been etched only with difficulty.

3,798,142

CORROSION PROTECTION

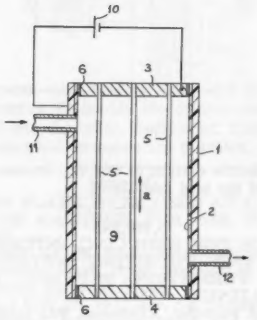
Lee Stanley Evans, Rugby, England, assignor to Courtaulds Limited, London, England

Continuation-in-part of abandoned application Ser. No. 64,591, Aug. 17, 1970. This application Apr. 20, 1972, Ser. No. 245,752

Claims priority, application Great Britain, Aug. 28, 1969, 42,793/69

Int. Cl. C23f *13/00*

U.S. Cl. 204—147 8 Claims



A corrosion resistant structure which comprises plastics material and metal, the plastics material having carbon fibres incorporated therein at such a concentration as to render at least part of the plastics material electrically conducting, the pastics material and the metal each having means for electrically connecting them to a source of electrical supply so that the metal is electrochemically protected. Examples of such structures are heat exchangers and boats with glass fibre-reinforced hulls.

3,798,143

ELECTROPHORETIC DEPOSITION OF ACRYLIC COPOLYMERS

Rolf Rolles and Paul F. Wallace, New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,735

Int. Cl. B01k *5/02*; C23b *13/00*

U.S. Cl. 204—181 9 Claims

Electrophoretic deposition of an acrylic interpolymer comprising methyl methacrylate and an acrylic acid or related unsaturated short-chain carboxylic acid on an aluminum or anodized aluminum substrate from an aqueous colloidal dispersion.

3,798,144

METHOD FOR SEPARATING LIQUIDS

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company

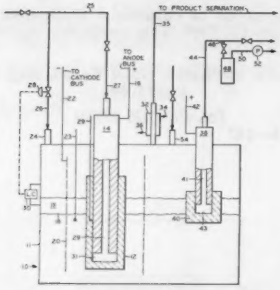
Original application Sept. 17, 1969, Ser. No. 858,734, now Patent No. 3,617,453. Divided and this application May 17, 1971, Ser. No. 143,892

Int. Cl. B01d *13/02*; B03c *5/00*

U.S. Cl. 204—186 6 Claims

Method and apparatus for removing a layer of a first liquid from a body of a second liquid. Said first liquid

is caused to selectively flow through the pores of and into a porous collection cup immersed therein. Application of an electric current to said cup increases the selectivity thereof for said first liquid.

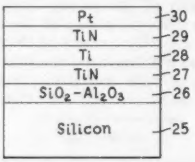


3,798,145

TECHNIQUE FOR REDUCING INTERDIFFUSION RATES AND INHIBITING METALLIC COMPOUND FORMATION BETWEEN TITANIUM AND PLATINUM

Paul Richard Fournier, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed May 30, 1972, Ser. No. 258,072
Int. Cl. C23c *15/00*; H01l *5/00*
U.S. Cl. 204—192 **4 Claims**



A technique for reducing the interdiffusion rates and inhibiting intermetallic compound formation between thin film titanium-platinum metallizations involves incorporating a titanium nitride layer intermediate the titanium and platinum.

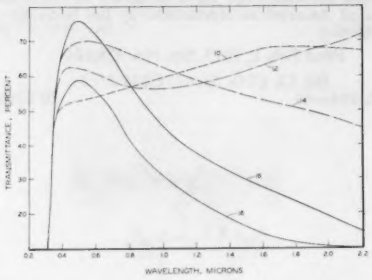
3,798,146

METHOD OF MAKING A TRANSPARENT ARTICLE HAVING REDUCED RADIATION TRANSMITTANCE

Chong T. Wan, Douglas L. Chambers, and Donald C. Carmichael, Columbus, Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Continuation of abandoned application Ser. No. 114,823, Feb. 12, 1971. This application June 6, 1973, Ser. No. 367,585
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **5 Claims**

A transparent article having reduced radiation transmittance which comprises a body of transparent glassy siliceous material having a smooth continuous surface, a continuous intermediate layer sputter-coated on the continuous surface to a thickness of from 10 to 200 A., the intermediate layer being of a metal selected from the group consisting of molybdenum, titanium, chromium, tungsten, tantalum, and their alloys, and a continuous film sputter-coated on the continuous intermediate layer to a thickness of from 100 to 500 A., the film being of a metal selected from the group consisting of gold, gold-base alloys, copper and copper-base alloys.

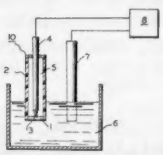


3,798,147

DEVICE FOR MEASURING AN ACTIVITY OF ZINC IONS

Kenji Higashiyama and Hiroshi Hirata, Osaka, Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Filed Feb. 28, 1972, Ser. No. 229,913
Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M **7 Claims**



A device for measuring an activity of zinc ions comprises a selective electrode and a reference electrode immersed in a solution containing zinc ions, said selective electrode including a disc in a batch composition which comprises a combination of zinc chalcogenide and at least one member selected from the group consisting of silver telluride and silver selenide or a combination of silver sulfide and at least one member selected from the group consisting of zinc telluride and zinc selenide.

3,798,148

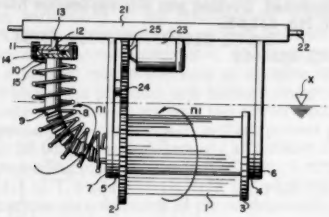
DEVICE FOR CONDUCTING CURRENT TO A ROTATING ELECTROPLATING BARREL

Wolfgang Petzold, Rankestrasse 72, Nuremberg, Germany

Continuation-in-part of abandoned application Ser. No. 75,164, Sept. 24, 1970. This application Aug. 23, 1972, Ser. No. 283,173
Claims priority, application Germany, Oct. 2, 1969, P 19 50 342.5
Int. Cl. C23b *5/78*
U.S. Cl. 204—213 **13 Claims**

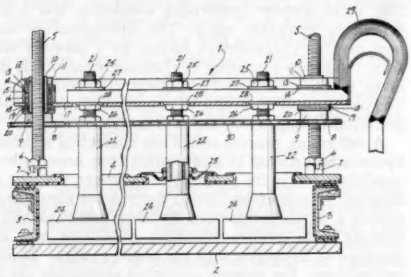
An arrangement for conducting electrical current to the interior of a rotating drum for the treatment of surfaces on articles within the drum. Electroplating current is con-

ducted from a stationary source to the bearings of a rotating drum, by way of a flexible cable. A flexible shaft made of a series of interlinking elements, carries a conducting cable having one end secured to an assembly



rotating with the shaft. The rotating assembly envelops a stationary disc-shaped member through which current is conducted to the movable assembly and the cable secured thereto.

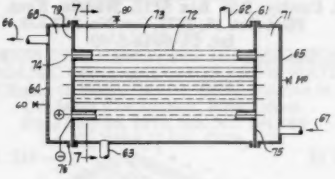
3,798,149
ANODE ADJUSTMENT MEANS FOR MERCURY CATHODE ELECTROLYTIC CELLS
Elmer N. Macken, Stamford, Conn., assignor to Olin Corporation
Filed Aug. 21, 1972, Ser. No. 282,530
Int. Cl. B23p 1/12; C22d 1/04
U.S. Cl. 204—225 **9 Claims**



The invention relates to improvements in apparatus for the adjustment of the elevation of anodes in a horizontal mercury cell employing a vertical motion coordinating member comprising the combination of a rotary member, a tube and a band. Rotation of the vertical motion coordinating member assures uniform positive vertical movement of the anode-supporting member.

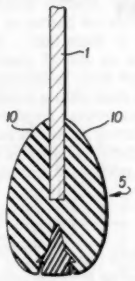
3,798,150
APPARATUS FOR THE TREATMENT OF LIQUORS USING POROUS DEPOSITION ELECTRODES
Allan E. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio
Filed Jan. 3, 1972, Ser. No. 214,650
Int. Cl. B01k 3/04
U.S. Cl. 204—272 **7 Claims**

Pressure cell apparatus for the treatment of electrically conductive feed liquor is set forth. The conformation of the apparatus is broadly that of a shell-and-tube heat exchanger that can be of the single pass or multipass variety, and it can have substantially straight or bent tubes, including tubes with return bends. However, in this apparatus tubes are electrodes, and they are microporous. Electrode means of polarity opposite the tubes are provided; e.g., in the form of one or more charged heads or



elements between such head or heads and the tube ends proximate thereto. Preferably the counter electrodes actually extend into the tubes. Appropriate fluid inlets and outlets and electrical terminals are provided.

3,798,151
DEPOSITION PLATE TO BE USED AS A STARTER BLANK OR CATHODE FOR USE IN METAL REFINING
Akira Takamura, Akashi, Yasuo Moriguchi, Nishinomiya, and Hiroshi Sato, Kobe, Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe-shi, Japan
Filed Sept. 28, 1972, Ser. No. 292,999
Claims priority, application Japan, Oct. 8, 1971, 46/93,125
Int. Cl. B01k 3/00; C23b 7/00
U.S. Cl. 204—281 **7 Claims**



A deposition plate to be used as a starter blank for producing a starter sheet useful in an electrolytic metal-refining process, the starter blank having a resilient, flexible frame around the peripheral edge thereof. To facilitate the insertion of the starter blank within the frame, as well as the stripping of the starter sheet from the starter blank, a wedge member is associated with the frame, the wedge member being removed from the frame upon insertion of the blank, and being subsequently inserted within the frame so as to lock the frame and blank together. The resilient flexible frame preferably forms a sharp intersection with the starter blank.

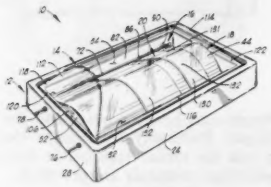
The plate may likewise be used as a cathode, in which case the resilient, flexible frame does not extend around the entire periphery of the cathode as is the case with the starter blank, but to the contrary, extends only along the longitudinal sides thereof, the bottom portion having been removed. To facilitate stripping of the copper deposits

from the cathode plate, the bottom edge of the plate contains an inwardly extending V-shaped groove or notch in lieu of the removed portion of the resilient frame.

3,798,152
ELECTROPHORESIS CELL MEANS

Leo P. Cawley, P.O. Box 8152, Wichita, Kans. 67208

Filed Oct. 16, 1972, Ser. No. 297,638
Int. Cl. B01k 5/00
U.S. Cl. 204—299 9 Claims

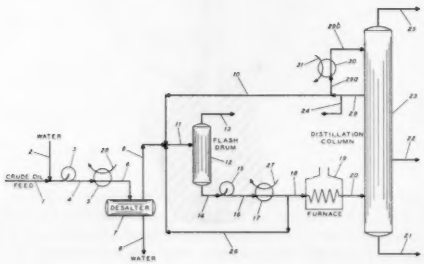


An electrolytic cell for immundodiffusion has a covered tray. Within the tray are oppositely chargeable electrodes. The tray has a cavity with an inlet and an outlet. The electrolytic cell receives conductive gel in the tray in contact with the electrodes. A heat transfer fluid is passed through the cavity to regulate the temperature of the gel.

3,798,153
CRUDE OIL PROCESSING

John H. Arndt, Jr., Berkeley, and Wayne A. Ebert, Dublin, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 26, 1973, Ser. No. 326,616
Int. Cl. C10g 17/00, 33/00
U.S. Cl. 208—48 AA 9 Claims

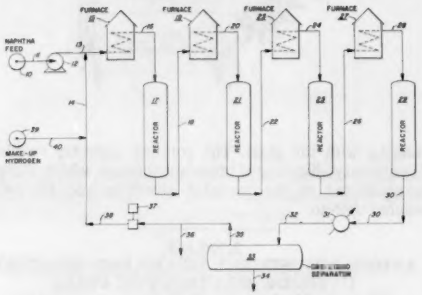


In a process which comprises heating, desalting and then further heating hydrocarbonaceous oil using heat exchangers and a desalter, an improvement is made which comprises: (a) desalting the oil to obtain desalted oil; (b) injecting a hot fluid into the desalted oil, said hot fluid being at a temperature higher than the desalted oil; and (c) flashing the desalted oil before further heating of the desalted oil in any heat exchanger. Preferably, the hot fluid injected into the desalted oil is a hot distillate withdrawn from the crude oil distillation column located downstream of the flashing step. The hot distillate serves to ameliorate possible foaming in the flash drum by lowering the viscosity of the desalted oil through raising the over-all temperature and through the lower viscosity of the distillate compared to the crude oil at a given temperature.

3,798,154
REFORMING WITH A NON-NOBLE-METAL-MORDENITE CATALYST

Ralph J. Bertolacini, Chesterton, Ind., and Harry M. Brennan, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Original application Feb. 16, 1971, Ser. No. 115,613, now abandoned. Divided and this application Mar. 1, 1972, Ser. No. 231,052
Int. Cl. C10g 35/08, 39/00, 35/06
U.S. Cl. 208—65 24 Claims



The catalyst comprises a hydrogenation component comprising a member selected from the group consisting of a metal of Group VI–A, compounds of a metal of Group VI–A, and mixtures thereof supported on a co-catalytic solid support comprising mordenite and a porous refractory inorganic oxide. The hydrogenation component may be characterized further by a member selected from the group consisting of rhenium, compounds of rhenium, a non-noble metal of Group VIII, compounds of a non-noble metal of Group VIII, and mixtures thereof. The preferred Group VI–A metal is molybdenum.

A reforming process comprises contacting a petroleum hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst. In one embodiment, the process comprises contacting a partially-reformed hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst. In another embodiment, the process comprises contacting the petroleum hydrocarbon stream in a first reforming zone under reforming conditions and in the presence of hydrogen with a catalyst comprising a platinum group metal and a halide on alumina to produce a first reformate and subsequently contacting the first reformate in a second reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst.

3,798,155
HYDROCARBON CONVERSION PROCESS AND BIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,819
Int. Cl. C10g 35/06
U.S. Cl. 208—139 8 Claims

A catalytic composite comprising a combination of a platinum group component, a bismuth component and a halogen component with a porous carrier material is disclosed. The platinum group metal and halogen components are present in the composite in amounts, calculated on an elemental basis, corresponding to about 0.01 to about 2 wt. percent platinum group metal and about 0.1 to about 3.5 wt. percent halogen. The bismuth component is present in

an amount corresponding to an atomic ratio of bismuth to platinum group metal of about 0.1:1 to about 1:1. Moreover, both the platinum group component and the bismuth component are uniformly dispersed throughout the porous carrier material and both of these metallic components are present in the elemental metal state. The principal utility of the subject composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specic example of the catalyst disclosed is a combination of a platinum component, a bismuth component, and a halogen component with an alumina carrier material, wherein the platinum and bismuth components are uniformly dispersed throughout the carrier material, wherein the composite contains 0.01 to 2 wt. percent platinum, 0.1 to 3.5 wt. percent halogen, and an amount of bismuth corresponding to an atomic ratio of bismuth to platinum of 0.1:1 to 1:1 and wherein both the platinum and bismuth components are present as the corresponding elemental metals.

3,798,156

HYDROPROCESSING CATALYST AND PROCESS

Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Sept. 22, 1971, Ser. No. 182,704
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **23 Claims**

The catalyst comprises a hydrogenation component on a solid catalytic support comprising a composite of zinc oxide and a catalytically active alumina. The support comprises a maximum amount of 50 wt. percent zinc oxide, based on the weight of said support. The hydrogenation component comprises a member selected from the group consisting of a metal of Group VI–A and a metal of Group VIII of the Periodic Table of Elements, the oxides of said metals, the sulfides of said metals, and combinations thereof. A preferred Group VI–A metal is molybdenum and a preferred Group VIII metal is cobalt.

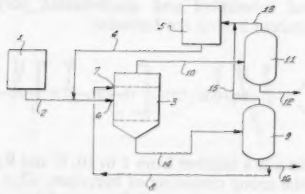
The process comprises contacting a hydrocarbon feedstock in a reaction zone with the above catalytic composition in the presence of hydrogen and under hydroprocessing conditions. An embodiment of the process is a hydrodesulfurization process.

3,798,157

PROCESS FOR THE REMOVAL OF CONTAMINANTS FROM HYDROCRACKING FEEDSTOCKS

Fernando Manzanilla, Armando Manjarrez, and Lino Conroy, Mexico City, and Julio Lara, Edo. de Mexico, Mexico, assignors to Instituto Mexicano del Petroleo, Mexico City, Mexico

Continuation of abandoned application Ser. No. 84,853, Oct. 28, 1970. This application May 10, 1973, Ser. No. 358,841
Int. Cl. C10g *21/40*
U.S. Cl. 208—251 **2 Claims**



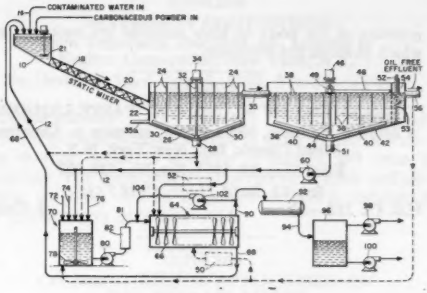
The elimination of metallic poisons for hydrocracking catalysts and asphaltene and like polymer fractions from feedstocks is achieved rapidly and effectively by adding to the feedstock insoluble finely particulate matter, e.g. talc or asphaltene in quite minor amount, combining the metallic compounds and polymer fractions into gravity separable agglomerates and separating the agglomerates and the desired fraction of the feedstock.

3,798,158

PROCESS FOR REMOVING OIL AND OTHER ORGANIC CONTAMINANTS FROM WATER

Clinton O. Bunn, Denver, Colo., assignor to Col-Mont Corporation, Butte, Mont.

Filed May 26, 1971, Ser. No. 146,985
Int. Cl. B01d *15/06*; C02b *1/14*
U.S. Cl. 210—33 **12 Claims**



Method of the removal of oil and other organic contaminants from polluted effluent, particularly oil refinery effluent. The oil is sorbed by carbonaceous material either in the form of —200 mesh or finer carbon particles in the form of coal, fly ash or activated carbon, or a porous matrix comprised of such finely divided carbon particles and a powdered plastic such as polyethylene, or a combination of powdered carbon particles and matrix. The sorbent is stripped of the oil thereby conditioning the same for reuse in the system, or withdrawal from the system, in the case of matrix formation, for use independent of the system.

3,798,159

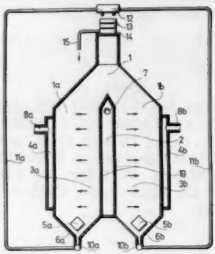
METHOD AND APPARATUS FOR CONTINUOUS FILTRATION OF LIQUIDS WITH SIMULTANEOUS REGENERATION OF FILTER MEDIUM

Laszlo Kisbocskoi, Budapest, Sandor Kubo, Tatabanya, and Gusztav Reczey, Budapest, Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary

Filed Feb. 23, 1972, Ser. No. 228,709
Claims priority, application Hungary, Feb. 23, 1971, TA–1,105
Int. Cl. B01d *15/06*
U.S. Cl. 210—33 **9 Claims**

Liquids are continuously filtered through a portion of a filter medium such as sand with simultaneous regeneration of other portions of the filter medium. The raw liquid passes from a vertical distributor horizontally through a vertical filter bed in a single filter chamber while another portion of the filter bed in the same filter chamber is offstream. The offstream filter material is removed from the bottom and the material that has been filtered out is removed therefrom, whereupon the filter material is returned to the top of the single chamber, where it again fills the space from which it was removed. Separate filtrate

collectors are provided which are selectively placed in communication with an outlet thereby to determine which



portions of the body of filter material are onstream and which portions are offstream.

3,798,160

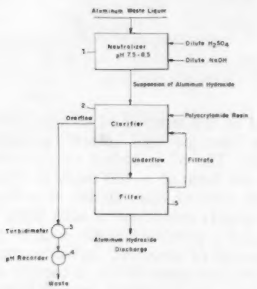
TREATMENT OF ALUMINUM WASTE LIQUORS

Clifton J. Huffman, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,807

Int. Cl. B01d *21/01*; C01f *7/34*

U.S. Cl. 210—53 **5 Claims**



Method of recovering aluminum values from aluminum waste liquor which comprises adjusting the pH of the liquor to 6 to 8.5, thus causing precipitation of aluminum hydroxide, adding sufficient polyacrylamide resin solution to produce a concentration of 1 to 5 p.p.m. of resin in the liquor, allowing the aluminum hydroxide precipitate to settle in a thickener, withdrawing the supernatant liquid from said thickener, removing the precipitate from said thickener by filtration, recycling the filtrate to the thickener, and collecting the aluminum hydroxide filter cake from the filter.

3,798,161

COMPOSITION FOR PREPARING GRAPHITE BODIES

Robert L. Hamner and John M. Napier, Oak Ridge, Earl W. Stooksbury, Jacksboro, and Richard A. Strehlow, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,729

Int. Cl. C01b *31/04*

U.S. Cl. 252—1 **2 Claims**

This invention relates to a graphitizable composition that can be extruded at low temperatures to form a shaped article which upon carbonization yields a body having an open porosity of up to 30 percent as measured by mercury porosimetry, said composition further characterized in that it comprises a homogeneous mixture of graphite or graphitizable filler material and a liquid binder consisting essentially of polymerized isotruxene and acenaphthylene.

3,798,162

LUBRICATING COMPOSITIONS CONTAINING METAL PHOSPHONATES

Joseph J. Dickert, Jr., and Carleton N. Rowe, Lower Makefield Township, Pa., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 70,901, Sept. 9, 1970. This application Aug. 14, 1972, Ser. No. 280,604

Int. Cl. C10m *1/44, 3/38, 5/24*

U.S. Cl. 252—32.5 **15 Claims**

The extreme pressure properties of organic fluids are improved by adding thereto a small amount of a gold hydrocarbyl hydrocarbylphosphonate complexed with a basic nitrogen compound or another metal hydrocarbyl hydrocarbylphosphonate which may or may not be so complexed.

3,798,163

LUBRICANT COMPOSITION FOR INHIBITING VALVE RECESSION

Robert C. Palmer, Markham, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed July 23, 1971, Ser. No. 165,732

Int. Cl. C10m *1/40*

U.S. Cl. 252—33.4 **17 Claims**

A method for improving the wear properties of exhaust valves of natural gas fueled internal combustion engines is disclosed. The method involves lubricating the engine with a composition which comprises oil of lubricating viscosity, alkaline earth metal sulfonate, and at least one alkaline earth metal salt of a condensation product of an alkylene polyamine, an aldehyde and a substituted phenol.

3,798,164

POLYOXYALKYLENE BIS-THIOUREA EXTREME PRESSURE AGENTS AND METHODS OF USE

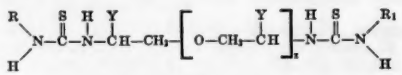
Thomas J. Kmet, Midlothian, and Jon A. Loboda, Chicago, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Original application May 24, 1971, Ser. No. 146,535, now Patent No. 3,704,321. Divided and this application Sept. 14, 1972, Ser. No. 289,203

Int. Cl. C10m *1/06, 1/38*

U.S. Cl. 252—47.5 **6 Claims**

Novel substituted and unsubstituted polyoxyalkylene bis-thioureas having the formula:



wherein x is a number from 1 to 10, R and R_1 are selected from the group consisting of hydrogen, alkyl and alkenyl, Y is hydrogen or lower alkyl, are useful as extreme pressure lubricants in metal working fluids and particularly in aqueous type fluids. Compositions comprising the thioureas and a boundary lubricant provide the anti-weld and friction reduction properties necessary for heavy duty machining.

3,798,165

LUBRICATING OILS CONTAINING HIGH MOLECULAR WEIGHT MANNICH CONDENSATION PRODUCTS

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965, now Patent No. 3,539,633. This application Feb. 10, 1969, Ser. No. 798,102

Int. Cl. C10m *1/20, 1/32*

U.S. Cl. 252—51.5 R 6 Claims

Oil soluble high molecular weight Mannich condensation products formed by reacting (1) high molecular weight alkyl-substituted hydroxy aromatic compounds whose alkyl-substituent has a number average molecular weight ($\overline{M}n$) from about 600–100,000, (2) a compound containing at least HN< group, and (3) an aldehyde in the respective molar reactant ratio of 1:0.1–10:1.0–10, are highly efficient ashless type (metal free) dispersant-detergent lubricant oil addition agents. Lubricating oils containing these compositions provide a high degree of protection against the deposition of sludge and varnish and corrosion when used as crankcase lubricants. Bis-Mannich products prepared by condensing (1) a 850–2500 $\overline{M}n$ polyalkyl-substituted phenol, (2) an alkylene polyamine and (3) formaldehyde in the respective molar ratio of 1.0:0.7–1.0:1.5–2.1 are novel products and are especially effective for high severity detergent-dispersant function over the extended oil drain range of crankcase lubricant oils recommended by automobile manufacturers.

3,798,166

LUBRICANT COMPOSITIONS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Jan. 5, 1972, Ser. No. 215,641

Int. Cl. C10m *1/34, 1/36*

U.S. Cl. 252—51.5 A 8 Claims

Lubricants having added thereto a small amount of a mixture of an acylamido diarylamine and a di(alkaryl) amine have improved oxidation stability.

3,798,167

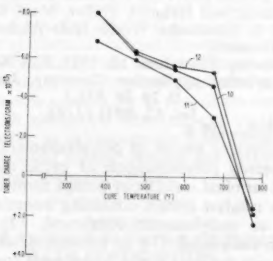
ELECTROPHOTOGRAPHIC DEVELOPER HAVING CONTROLLED TRIBOELECTRIC CHARACTERISTICS

William J. Kulka and Howard Everett Munzel, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,725

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 252—62.1 10 Claims



An electrophotographic development carrier comprises core particles coated with a fluoropolymer or a mixture of a fluoropolymer and a modifying material. When utilized with appropriate electroscopic toner materials, the carrier, which is coated with the mixture of the fluoropolymer and the modifying material, is effective in producing a desired polarity and magnitude of the triboelectric charge on the toner particles, and the carrier, which is coated with the fluoropolymer, is effective in producing a triboelectric charge of a desired magnitude on the toner particles. Control of the polarity and magnitude of the triboelectric charge characteristic of the the carrier, which has its particles coated with the mixture of the fluoropolymer and the modifying material, is obtained by heating the coated particles to a selected temperature depending upon the desired polarity and magnitude and the particular toner with which the carrier is used. Control of the magnitude of the triboelectric charge characteristic of the carrier, which is coated with the fluoropolymer, is obtained by controlling the curing conditions.

3,798,168

DETERGENT COMPOSITION

Leon Tumerman, Deerfield, Ill., assignor to Kraftco Corporation, New York, N.Y.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,430

Int. Cl. C11d *3/20*

U.S. Cl. 252—89 15 Claims

A composition which is soluble in water to form a washing solution which is effective to remove soil from a substrate. The composition comprises an organic surface-active detergent and an aluminate or borate compound of alphahydroxy carboxylic acids.

3,798,169

COMPOSITION FOR APPLICATION OF SOIL-RELEASE FINISH

Robert E. Dickson, Belle Mead, N.J., and Stanley M. Barkin, Pittsburgh, Pa., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,658

Int. Cl. C11d *7/22*

U.S. Cl. 252—89 13 Claims

A composition for applying a non-permanent soil-release finish to fabrics from dilute solution comprising a polycarboxylate polymer having an acid equivalent weight of from about 110 to 175, and a water-soluble salt of a polyvalent metal. A preferred polycarboxylate polyrelease finish to fabrics from dilute solution comprising mer is a copolymer of ⅔ methacrylic acid and ⅓ ethylacrylate. The composition is particularly useful for applying a soil-release finish in the rinse cycle of a home laundry process.

3,798,170

STABILIZED METHYLCHLOROFORM COMPOSITIONS

Wilbur H. Petering, Detroit, Mich., Charles E. Kircher, Jr., Youngtown, Ariz., and Paul R. Pinchak, St. Clair Shores, Mich., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

No Drawing. Continuation-in-part of application Ser. No. 218,542, Jan. 17, 1972, which is a continuation-in-part of application Ser. No. 815,483, Apr. 11, 1969, now abandoned. This application June 8, 1972, Ser. No. 261,069

Int. Cl. C11d *7/52*

U.S. Cl. 252—162 4 Claims

Methylchloroform compositions are provided which are stable in the presnece of metals, including aluminum, in either the anhydrous state or in the presence of water. The methylchloroform compositions of this invention contain pyrazine as the effective stabilizer. The compositions of this invention are useful in both liquid and vapor degreasing of metal and as a propellent for aerosol compositions.

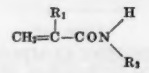
3,798,171

PROCESS FOR PRODUCING MONOMER MIXTURE

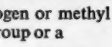
Masao Ishii, Tokyo, and Takashi Sunamori and Sadao Kimura, Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 767,818, Oct. 15, 1968, now Patent No. 3,652,478. This application Dec. 2, 1971, Ser. No. 204,369
Claims priority, application Japan, Oct. 27, 1967, 42/69,146, 42/69,147
Int. Cl. C08g *20/20*
U.S. Cl. 252—182 8 Claims

A process for producing a copolymerizable monomer mixture consisting essentially of an N-alkoxyalkylated unsaturated carboxylic acid amide and at least one α,β-ethylenically unsaturated carboxylic acid which comprises mixing an unsaturated carboxylic acid amide having the formula:



wherein R_1 is hydrogen or methyl group and R_2 is hydrogen, a lower alkyl group or a



group in which R_3 is hydrogen or a branched or straight alkyl group having 1 to 12 carbon atoms, and at least one α,β-ethylenically unsaturated carboxylic acid or its anhydride with at least one organic solvent capable of forming an azeotropic mixture with water, at least one alcohol and, if necessary, at least one aldehyde and then subjecting the resulting mixture to dehydration-condensation under a reduced or an ordinary pressure. Said process enables the monomer mixture produced to be used in the production of a copolymer for coating composition without isolating the N-alkoxyalkylated unsaturated carboxylic acid amide from the mixture.

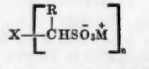
3,798,172

DYEING TEXTILE MATERIALS WITH VAT AND SULFUR DYES AND REDUCING AGENT STABILIZERS FOR SAME

James N. Etters, Danville, Va., assignor to Dan River Inc., Danville, Va.

No Drawing. Original application May 26, 1969, Ser. No. 827,894, now Patent No. 3,645,665. Divided and this application Nov. 23, 1971, Ser. No. 201,542
Int. Cl. D06p *1/30;* C09k *3/00*
U.S. Cl. 252—188 4 Claims

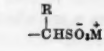
An improved process for dyeing cellulosic textiles with vat or sulfur dyes using sodium dithionite as reducing agent, using as a stabilizer for the reducing agent a stabilizer of the formula



wherein M is a monovalent cation selected from the class consisting of alkali metal and ammonium cations, R is a monovalent group selected from the class consisting of hydrogen, alkyl, alkenyl and furyl, *n* is an integer of 1 to 3, X is a group having a valence of *n* and is selected from the class consisting of hydroxyl and substituents having the formula

$$R'_{3-n}N$$

and R′ is a monovalent radical selected from the class consisting of hydrogen and monovalent hydrocarbon, said stabilizer being used in an amount providing about 0.01 to about 2 mols of



unit of said stabilizer per mol of said reducing agent. Also, the stabilizer as defined above in dry particulate form and novel mixtures of reducing agent and stabilizer.

3,798,173

PRODUCT AND PROCESS FOR EUROPIUM-ACTIVATED RARE EARTH PHOSPHOR

Dilip K. Nath, Euclid, and John R. Wolk, North Olmsted, Ohio, assignors to General Electric Company

Filed June 3, 1971, Ser. No. 149,456
Int. Cl. C09k *1/10, 1/54*
U.S. Cl. 252—301.4 F 9 Claims

Europium oxide activated rare earth phosphors are prepared having improved physical properties including uniform particle size of the phosphor crystals, brighter emission, and less electrical conductivity than can be obtained by conventional methods of preparation. The phosphor crystals are grown in the presence of a vitreous flux composition which is an alkali borosilicate material having a vitreous phase. The vitreous flux can be formed in situ by mixing the constituent materials with the rare earth oxides and heating the mixture to the firing temperature at which the phosphor crystals are formed or a preformed vitreous flux can be mixed with the rare earth oxides and the same firing schedule carried out. The final product can contain up to 15 weight percent vitreous flux in the luminescent material for optimum performance and said vitreous flux forms a coating on the phosphor crystals.

3,798,174

METHOD OF PREPARING THICKENING GRADE SILICA COMPOSITION

Ellsworth George Acker and Rimantas Glemza, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,182
Int. Cl. B01j *13/00;* C01b *33/12, 33/14*
U.S. Cl. 252—317 17 Claims

Thickening grades of silica are produced by an insolubilization technique. The process comprises forming an ammoniated alkali silicate solution, acidulating this solution to a pH of about 10.4 to 11 to form a silica hydrosol, and then prior to the setting of this hydrosol to a hydrogel, rapidly admixing this hydrosol with an ammonium salt solution. This admixing tends to further insolubilize the silica which then forms as soft loosely aggregated particles. This silica can then be concurrently deaggregated, and dried, dried and deaggregated or dewatered and deaggregated. This final processing will depend on the charactistics of the silica to be produced.

3,798,175

CATALYSTS FOR THE RING OPENING POLYMERIZATION OF CYCLIC OLEFINS

Roland Streck and Heinrich Weber, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed June 11, 1971, Ser. No. 152,374
Claims priority, application Germany, June 6, 1970, P 20 28 935.4
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 B 28 Claims

The molecular weight of polyalkenamers produced by a ring-opening polymerization of cyclic olefins is regulated and terminal carbalkoxy groups formed thereon employing a catalyst system consisting essentially of (1) a tungsten or molybdenum compound, (2) an organoaluminum compound, (3) an unsaturated carboxylic acid ester wherein the ester group is separated from the double bonded carbon atom by at least one methylene group or the single bonded oxygen atom of the ester group and at least one of the carbon atoms bearing the double bond bears at least one hydrogen atom, and, optionally, (4) a compound containing one or more hydroxy or sulfhydryl groups.

3,798,176

METHOD FOR MANUFACTURING A CATALYST AND ITS CARRIER HAVING A VACANT CENTER OR A DENSE CENTER

Takeo Ao, Osaka, Japan, assignor to Osaka Yogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 860,084, Sept. 22, 1969. This application Apr. 12, 1972, Ser. No. 243,472

Claims priority, application Japan, July 19, 1968, 43/50,565

Int. Cl. B01j *11/00, 11/40, 11/82*

U.S. Cl. 252—437 9 Claims

This invention relates to a method for manufacturing a catalyst and its carrier having a vacant center or a dense center. Such a carrier is made into pellet form by covering a desired core with a finely divided material, drying and calcining the resultant pellet. Such a catalyst is made of a carrier to which a solution containing a catalytic compound is impregnated, after which the impregnated carrier is calcined.

3,798,177

NOVEL CATALYST SUPPORT

Marion G. Reed, Hacienda Heights, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,819

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 R 14 Claims

The disclosure provides a novel catalyst support, a method of making said support by treatment of prior art crystalline catalyst supports with hydroxy-aluminum solution and hydrocarbon conversion processes wherein the catalyst used therein includes said support.

3,798,178

SELF-REGENERATIVE DEHYDROGENATION CATALYST

Frederick J. Soderquist, Essexville, and Lyle E. Martz, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 886,353, Dec. 18, 1969. This application Feb. 17, 1972, Ser. No. 227,267

Int. Cl. B01j *11/08, 11/22*

U.S. Cl. 252—468 9 Claims

Metal oxide dehydrogenation catalysts having an electrically conducting, discontinuous amount of certain specific metals incorporated either through the bulk of the catalyst or distributed on its surfaces provide comparatively high electrical conductivity, and can be more uniformly heated by use of an electrical current than similar catalysts having no free metal present. The metal-containing or metal-coated catalysts can comprise the entire mass of catalyst in a reactor, or such catalyst can be placed adjacent to the electrodes and in intimate contact with catalyst containing no metal to promote more uniform passage of electrical current through a catalyst bed. The novel method comprises the use of the catalyst having metal particles discontinuously distributed throughout its bulk as the sole catalyst, or as part of the catalyst bed in contact with electrodes, admixed with catalysts containing no metal, to dehydrogenate hydrocarbons, while passing an electrical current through the catalyst bed to maintain desired temperature levels.

3,798,179

GRANULAR FREE-FLOWING DETERGENT BATH COMPOSITION

James A. Hellyer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 29, 1971, Ser. No. 158,107

Int. Cl. C11d *1/28, 3/065*

U.S. Cl. 252—535 13 Claims

There are disclosed granular, free-flowing detergent bath compositions consisting essentially of a water soluble synthetic organic detergent (e.g., an alkali metal alkyl glyceryl ether sulfonate wherein the alkyl has from 10 to 18 carbon atoms) and a microencapsulated water insoluble and/or water-immiscible emollient (e.g., mineral oil or a mixture thereof with isopropyl myristate). The microencapsulated water-insoluble bath oil has a hydrolyzed protein encapsulating wall material soluble in water at a temperature of from 75° F. to 115° F. to release therefrom emollient bath oil. The compositions upon addition to bath provide combined sudsing and skin emollient effects without mutual antagonism or interaction, providing a floating layer of emollient beneath a layer of suds. A water-soluble alkaline builder salt, such as sodium tripolyphosphate, may be employed in combination with the water-soluble synthetic organic detergent.

3,798,180

BUILDER-CONTAINING DETERGENT COMPOSITIONS

Helmut Westernacher, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Nov. 10, 1971, Ser. No. 197,491

Claims priority, application Germany, Nov. 19, 1970, P 20 56 814.3

Int. Cl. C11d *3/066, 3/07*

U.S. Cl. 252—527 31 Claims

Washing compositions containing a detergent and, as a builder, a water soluble salt of an amino partial amide of a polymeric carboxylic acid, e.g., styrene-maleic anhydride copolymer.

3,798,181

ENZYMATIC DETERGENT BAR

Salvador Morelos Vazquez, Atzcapotzalco, Mexico City, Mexico, assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 3, 1970, Ser. No. 86,594

Int. Cl. C11d *3/38, 17/00*

U.S. Cl. 252—539 10 Claims

An enzymatic detergent bar, especially useful for washing laundry and removing stains therefrom, comprises: a synthetic organic detergent, e.g., linear higher alkyl aryl sulfonate; an enzyme, e.g., a protease; a builder or filter salt, e.g., alkali metal carbonate, alkali metal sulfate; a binder, e.g., corn starch; and water, in such proportions as result in production of a form-retaining, hard, nontacky, readily soluble and effectively cleaning bar.

Also disclosed are methods for making and using the described detergent bar.

3,798,182

MILDNESS ADDITIVE

Ralph Kelly, 6705 Sampson Lane, Cincinnati, Ohio 45236, and Edmund Jean Ritter, R.R. 1, Box 13–A, Loveland, Ohio 45140

No Drawing. Application Jan. 9, 1968, Ser. No. 696,509, now Patent No. 3,630,934, which is a continuation-in-part of application Ser. No. 613,095, Feb. 1, 1967, now Patent No. 3,538,009. Divided and this application May 5, 1971, Ser. No. 140,576

Int. Cl. C11d *1/00*

U.S. Cl. 252—546 11 Claims

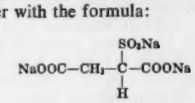
Detergent formulations containing a skin irritating detergent and as a mildness additive for preventing or reducing skin irritation a compound having the formula:

Y—R—Y′

wherein R is a divalent organic radical containing a chain of at least 15 atoms between the open valence of the radical, the majority of which are carbon atoms, and containing a cyclic moiety of at least 5 atoms, and wherein Y and Y′ are polar groups which contain at least one nitrogen, oxygen, sulfur or phosphorus atom or combination thereof.

3,798,183
DETERGENT BUILDER COMPOSITION
Herman A. Bruson, Woodridge, Conn., and Henry Gould, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.
No Drawing. Filed Aug. 20, 1971, Ser. No. 173,654
Int. Cl. C11d 1/14, 1/22
U.S. Cl. 252—557 **1 Claim**

The present invention relates to a detergent formulation having a builder with the formula:



3,798,184
POLYURETHANES STABILIZED BY INCORPORATING THE REACTION PRODUCT OF ACETONE AND DIPHENYLAMINE
Michael Cuscurida and Doris Marvin Rice, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Filed July 5, 1972, Ser. No. 269,153
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 BB **5 Claims**

Polyurethane compositions prepared from particular polyether polyols are stabilized against dry-heat degradation by incorporating therein the reaction product of acetone and diphenylamine.

3,798,185
GAS PERMEABLE MEMBRANES AND PROCESS FOR MAKING SAME
William E. Skiens, Walnut Creek, Ben J. Lipps, Concord, Earl A. McLain, Walnut Creek, and Donald E. Dubocq, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,289
Int. Cl. C08j 1/14
U.S. Cl. 260—2.5 M **23 Claims**

The incorporation of polyorganosiloxanes and/or hydrocarbon extender oils in certain thermoplastics which are compatible with the siloxane and/or hydrocarbon oil at elevated melt temperatures and which have on oxygen permeability constant of at least about 0.5×10^{-10} cc. cm./(cm.^{2} sec. cm. Hg) greatly improves the permeability of membranes prepared from same to gases such as oxygen and carbon dioxide. Novel processes for making the membranes are disclosed.

3,798,186
COMPOSITION FOR PLUGGING FORMATIONS HAVING PORES IN CONSTRUCTIVE WORKS
Sadao Nakade, Itami, and Hirosuke Kubota, Toshiyuki Oshita, and Kuniyoshi Sakane, Osaka, Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka-shi, Japan
No Drawing. Original application Mar. 20, 1969, Ser. No. 808,865, now Patent No. 3,623,330. Divided and this application May 11, 1971, Ser. No. 142,376
Claims priority, application Japan, Mar. 21, 1968, 43/18,635; July 13, 1968, 43/49,492; Nov. 16, 1968, 43/83,940
Int. Cl. C08g 41/04
U.S. Cl. 260—2.5 A **7 Claims**

This invention relates to composition for plugging formations in civil engineering and construction, reinforced underground structure and underground structure required for strengthening the ground thereof, which may be effectively utilized in plugging or in strengthening unstable ground in sealing-off points of water leakage or oil leakage in civil engineering and construction, in preventing gas leaks in soils or in construction, or in increasing bearing capacities of pull-out or push-in piles to be constructed.

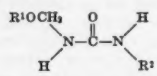
Thus, the invention is intended to provide a composition for plugging formations having interstices and a composition for compacting formations by filling interstices with a solidified substance and also provide a reinforced ground structure and an undergound structure for reinforcing the ground, characterized in that a fluidal substance, such as an isocyanate compound, which upon coming into contact with water, reacts thereby to produce water-insoluble solidified substance and liberating a gas, is forced to be present in the interstices in formations such as water leakage regions in civil engineering and construction and a ground or weak ground where water leakage or water seepage is expected, so that it reacts with the water and the resulting insoluble solidified substance is allowed to be intimately bonded to the surfaces of the interstices under the pressure of the liberated gas, thereby sealing-off the interstices easily and effectively.

3,798,187
PHOTO-DEGRADABLE STYRENE TYPE RESIN COMPOSITIONS
Hiroshi Miyoshi, Takatsuki, Tomoo Shinohara, Kyoto, and Hiroyuki Tateishi, Shiga, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed June 22, 1971, Ser. No. 155,617
Int. Cl. C08f 33/08, 47/10
U.S. Cl. 260—2.5 HB **14 Claims**

Photo-degradable styrene type resin compositions formed by addition of at least one halogenated polystyrene, in which at least a portion of the hydrogen atoms linked with the carbon atoms in the main chain of the polymer are substituted with halogen atoms, in an amount sufficient to exhibit photo-degradation-promoting action, to a styrene type resin.

3,798,188
EXPANDABLE POLYMERIC COMPOSITION
Makoto Takizawa, Ageo, Kinzo Miyamoto, Mitaka, Matahiko Asahi, Tokyo, and Megumu Nakamoto, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,453
Int. Cl. C08j 1/20
U.S. Cl. 260—2.5 R **8 Claims**

A polymeric composition composed of a polymeric thermoplastic material and 0.01–20% by weight of a urea derivative of the formula:



wherein R^1 is hydrogen or alkyl of 1–5 carbon atoms and R^2 is hydrogen or $—CH_2OR^1$. The urea derivative undergoes condensation with the separation of water and simple alcohols and functions as a chemical blowing agent at an elevated temperature within the range of 100 to 270° C.

3,798,189
SILICONE RESINS USED AS SURFACTANTS IN VINYL CHLORIDE FOAM
Edward T. Simoneau, Burnt Hills, Richard E. Moeller, Troy, and Norman G. Holdstock, Scotia, N.Y., assignors to General Electric Company
No Drawing. Application Nov. 10, 1970, Ser. No. 88,472, now Patent No. 3,730,931, which is a continuation-in-part of abandoned application Ser. No. 53,973, July 10, 1970. Divided and this application Mar. 1, 1973, Ser. No. 337,069
Int. Cl. C08f 47/08, 29/24
U.S. Cl. 260—2.5 P **11 Claims**

A composition comprising a vinyl chloride polymer, a plasticizer and a silicone resin selected from a silicone resin having $R_3SiO_{1/2}$ monofunctional units and SiO_2

tetrafunctional units with the ratio of the monofunctional units to the tetrafunctional units being from 0.25 to 0.75 with 3.0 to 5.0% by weight of hydroxyl groups and a silicone resin having $R'_3SiO_{1/2}$ monofunctional units and SiO_2 tetrafunctional units and R^2_2SiO difunctional units with the ratio of monofunctional units to tetrafunctional units to difunctional units being from 0.25–0.75 to 1 to 0.05–0.1 with 3.0 to 5.0% by weight of hydroxyl groups and wherein R, R', R^2 are monofunctional hydrocarbon radicals. The composition is mechanically frothed with air to produce a foam which is then heated to gel and fuse the foam. There is preferably used in the above composition one of the above silicone resins which has been further treated so that it has less than about 0.5% by weight of hydroxyl groups. In addition, there is provided a very efficient foaming agent which is produced by adding one of the above silicone resins with a select class of plasticizers, such as dioctyl phthalate.

3,798,190

RUBBER BLENDS CONTAINING AN HYDROGENATED STYRENE BUTADIENE RANDOM COPOLYMER

Toshio Yoshimoto, Takaaki Imamura, Kazuo Tanaka, and Arata Miyagi, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 677,731, Oct. 24, 1967. This application Aug. 19, 1970, Ser. No. 64,959

Claims priority, application Japan, Nov. 3, 1966, 41/72,485

Int. Cl. C08c *9/04, 9/08*

U.S. Cl. 260—5 **2 Claims**

A rubbery vulcanizable composition having an increased green strength, which comprises a blend of (a) at least one polymer selected from the group consisting of natural rubber, polyisoprene, styrene-butadiene copolymer, polybutadiene, butyl rubber and ethylene-propylene terpolymer and (b) from 5 to 95 parts by weight of an hydrogenated copolymer per 100 parts by weight of said blend, said hydrogenated copolymer having polymeric monomer units which consist of

(1) styrenic units,
(2) conjugated diolefinic units, and
(3) hydrogenated conjugated diolefinic units,

wherein the styrenic units are randomly distributed in the polymeric monomer units.

3,798,191

INORGANIC CEMENT COMPOSITIONS CONTAINING EPOXY RESIN AND POZZOLAN

James H. Donnelly, San Francisco, Calif., assignor to Epoxon Corporation, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 157,250, Dec. 5, 1961, now Patent No. 3,198,758, which is a continuation-in-part of application Ser. No. 817,477, June 2, 1959. This application July 26, 1965, Ser. No. 474,946

The portion of the term of the patent subsequent to Aug. 3, 1982, has been disclaimed

Int. Cl. C08g *30/00, 51/04*

U.S. Cl. 260—13 **19 Claims**

This invention is directed to an inorganic cement composition comprising from 1 to 300 parts by weight of inorganic cement, of which from 5–100% by weight is pozzolan, and from 1–200 parts by weight of a thermosetting epoxy resin and an amine curing agent therefor.

3,798,192

POLYTHIOL BASED SEALANTS

Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,718

Int. Cl. C08g *43/02, 47/10*

U.S. Cl. 260—29.2 M **21 Claims**

The adhesive characteristics of cured sealant formulations based on polythiol polymers are substantially improved by the incorporation into the uncured sealant formulation of at least one glycidyl trialkyloxysilane which has been at least partially hydrolyzed prior to such incorporation. The use of the hydrolyzed glycidyl trialkyloxysilane enhances the adhesion quality of the cured sealant over that achieved by the incorporation of the same amount of glycidyl trialkyloxysilane into the polythiol. Water or ethylene glycol can also be incorporated into the polythiol to further improve the properties of the sealant.

3,798,193

PROCESS FOR PREPARING AN ELECTROCOATING COMPOSITION

Girish Girdhar Parekh, Stamford, and Werner Josef Blank, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 139,912, May 3, 1971. This application Sept. 28, 1972, Ser. No. 293,235

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 UA **10 Claims**

A process for preparing an electrocoating composition comprising mixing (1) from about 40% to about 95%, by weight, of a uniquely prepared anionic acrylic polymer containing at least carboxyl and alcoholic hydroxyl functions, (2) from about 4% to about 50%, by weight, of an amine-aldehyde cross-linking agent, (3) from about 1.0% to about 20%, by weight, of a neutralizing agent, such as an alkali hydroxide or an amine, (4) from about 0% to about 70% of pigment, and (5) from 20% to 95% water. The acrylic polymer is prepared by the copolymerization of a styrene, an alkyl acrylate, such as butyl acrylate, and maleic anhydride which is followed by reaction with an appropriate aliphatic diol containing of from 3 to 8 carbon atoms and possessing primary and secondary hydroxyl groups, such as 1,2-propylene glycol and 2,2-dimethyl-1,3-butanediol. The composition finds utility in coating applications, wherein the bath stability containing said resinous coating composition and high pigment levels in said composition are assured.

3,798,194

PREPARATION OF LATEXES BY DIRECT DISPERSION OF ACIDIC ORGANIC POLYMERS INTO AQUEOUS ALKALINE MEDIA CONTAINING CERTAIN ALKANOLS

Gordon D. McCann and Earl T. Dumitru, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,622

Int. Cl. C08f *47/16*

U.S. Cl. 260—29.6 E **10 Claims**

Synthetic latexes and aqueous colloidal dispersions, free of added external surfactants and emulsifiers, are made from normally solid, water- and alkali-insoluble thermoplastic organic addition polymers containing a plurality but low concentration of carboxylic acid groups in the polymer structure and which are in non-colloidal massive form by digesting the polymer in admixture with an enveloping alkaline aqueous liquid medium containing an alkanol such as n-butanol, n-pentanol, or mixtures thereof until the polymer spontaneously converts into colloidal particles in the aqueous medium. In examples, a solid thermoplastic copolymer of ethylene and 8% by weight acrylic acid, in the form of molding granules, was converted to latex form by digestion in aqueous ammonia con-

taining n-butanol. The resulting dispersions are useful in impregnating, coating and adhesive compositions.

3,798,195
THERMOSTABLE POLYMERIC VINYLIDENE CHLORIDE COMPOSITIONS
Richard E. Watson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation of abandoned application Ser. No. 169,356, Aug. 5, 1971. This application Apr. 26, 1973, Ser. No. 354,593
Int. Cl. C09d *3/74*
U.S. Cl. 260—30.4 R **5 Claims**

This invention is directed to compositions of matter comprising a polymer of vinylidene chloride and as a heat stabilizing agent therefor, from about 0.25 to 2 percent by weight of N,N-bis (2-hydroxyethyl) glycine sodium salt.

3,798,196
SULFUR CONTAINING ORGANO-ORGANO-OXYSILANE
Gottfried Rocktäschel, Friedrich Thurn, and Horst Fleischhauer, Grossauheim, Werner Schwarze, Frankfurt am Main, and Hermann Westlinning, Kleinostheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed July 16, 1971, Ser. No. 163,467
Claims priority, application Germany, July 18, 1970, P 20 35 778.2
Int. Cl. C08f *45/04*
U.S. Cl. 260—41.5 A **14 Claims**

There are prepared sulfur containing organo-organo-oxysilanes of the formula A—X—Z where A is

$$N{\equiv}C{-}S{-}$$

R—S—, RO—CS—S—, RS—CS—S—, R_1—CS—S—, where R and R_1 are univalent organic residues, X is a divalent organic residue, Z is $-SiR''(OR')_2$;

$$-Si(OR')_3$$

$$-Si(OR')_2-O-Si(OR')_3;$$

$$-Si(OR')_2-NH-Si(OR')_3;$$

$$-Si(OR')_2-O-Si(OR')_2-X-A;$$

$$-Si(OR')_2-NH-Si(OR')_2-X-A$$

where R' and R'' are alkyl groups of 1 to 12 carbon atoms. The compounds are useful as additives to cross-linkable mixtures containing organic polymers.

3,798,197
METHOD FOR THE MANUFACTURE OF LATEX BONDED ASBESTOS COVER LAYERS AND COVERS PRODUCED
Walter Naschwitz and Elisabeth Knust, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen and Berlin, Germany
Filed Jan. 21, 1972, Ser. No. 219,684
Claims priority, application Germany, Jan. 29, 1971, P 21 04 333.4
Int. Cl. C08c *11/16*; H01m *27/00, 3/02*
U.S. Cl. 260—41.5 A **10 Claims**

A process for the production of latex bonded cover layers for electrochemical cells, particularly fuel cells, is described. Amphibole asbestos, particularly anthophyllite asbestos, bundles are broken down by a cationic wetting agent. The nonbroken-down particles are removed. A suspension is made from the asbestos fibers and filler substances in the form of powders, with a grain size of up to 100μ, which are stable in acid electrolyte, have ionic conductivity and can be swelled to several times their volume. Bentonite and cationic ion exchangers are particularly suitable as the filler substances. The suspension is mixed with an acid resistant latex and formed into a finished cover layer.

3,798,198
HYDROLYTICALLY STABILIZED POLYURETHANES
Lionel Geoffrey Hole, Barton Seagrave, England, assignor to The Shoe and Allied Trades Research Association, Kettering, England
Filed Dec. 18, 1970, Ser. No. 99,626
Claims priority, application Great Britain, Dec. 19, 1969, 62,094/69; Apr. 10, 1970, 17,228/70
Int. Cl. C08g *51/58, 51/60, 51/62*
U.S. Cl. 260—45.85 R **17 Claims**

Products partly or wholly composed of polymeric condensates, especially polyurethane, and stabilized against hydrolytic degradation by the incorporation of a minor amount, not less than ½%, of a stabilizer selected from chelating agents, weak free organic acids and buffer salts. A preferred stabilizer is ethylene diamine tetraacetic acid (EDTA) or a soluble salt thereof, e.g. the disodium salt. The stabilization is particularly effective when the product incorporates inorganic cations such as residual catalyst. A process in which the stabilizer is added to a solution of the polymeric condensate which is subsequently formed by solvent removal into a product.

3,798,199
CARBOXYLIC ACID DIHYDRAZIDE POLYMERS
Yuri W. Han, Los Angeles, Calif., assignor to Lockheed Aircraft Corporation, Los Angeles, Calif.
No Drawing. Filed Oct. 5, 1972, Ser. No. 295,160
Int. Cl. C08g *9/06, 5/02*
U.S. Cl. 260—49 **19 Claims**

A new class of polymer, namely a carboxylic acid dihydrazide-diol-aldehyde polymer, is prepared by polymerizing a carboxylic acid dihydrazide with a diol and an aldehyde under temperature conditions to form an N-uncyclized polyamic acid. The polyamic acid is then internally N-N cyclized at a higher temperature.

3,798,200
POLYETHER URETHANE ELASTOMER HAVING AN IMPROVED CUT GROWTH AND FLEX CRACK RESISTANCE AND THE PROCESS FOR PREPARATION THEREOF
Yoshio Kaneko, Tsutomu Matsunaga, Yoji Watabe, and Shigeyuki Toki, Tokyo, Japan, assignors to Bridgestone Tire Co. Ltd., Tokyo, Japan
Filed Dec. 13, 1972, Ser. No. 314,848
Int. Cl. C08g *22/14*
U.S. Cl. 260—77.5 AM **13 Claims**

Polyether urethane elastomer having improved cut growth and flex crack resistance prepared by using polyfunctional isocyanate, curing agent and polyether having active hydrogen terminal groups, wherein the weight average molecular weight of said polyether is within the range of 4,000 to 20,000 and the molecular weight distribution curve of said polyether has at least two peaks, at least one of which is located in the higher molecular weight region and at least another one of which is located in the lower molecular weight region than the rheological critical molecular weight of said polyether.

3,798,201
MOLTEN LEWIS ACID HIGH PERFORMANCE HETEROCYCLIC POLYMER POLYMERIZATION
Lowell Saferstein, Plainfield, and William A. Mannion, Springfield, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 221,779, Jan. 26, 1972. This application Feb. 24, 1972, Ser. No. 229,178
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 TF **9 Claims**

An improved process is provided for the synthesis of high performance heterocyclic polymers wherein the polymerization is conducted in the presence of a molten Lewis acid selected for its ability to dissolve the high

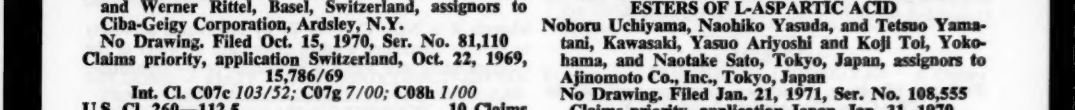
molecular weight polymer and to remove water produced via the condensation reaction.

3,798,202
POLYOLEFIN PRODUCTION
Benny E. Nasser, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 12, 1971, Ser. No. 188,186
Int. Cl. B01j *11/06;* **C08f** *15/00, 1/66*
U.S. Cl. 260—88.2 R **9 Claims**

A catalyst and a method of employing that catalyst are disclosed, the catalyst being comprised of a mixture of two supported catalysts active for olefin polymerization, the catalysts differing in respect to their titanium contents.

3,798,203
ANALOGUES OF HUMAN THYROCALCITONIN MODIFIED WITH CORRESPONDING AMINO ACIDS OF SALMON THYROCALCITONIN AND DERIVATIVES THEREOF
Max Brugger, Birsfelden, Bernhard Riniker, Frenkendorf, and Werner Rittel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,110
Claims priority, application Switzerland, Oct. 22, 1969, 15,786/69
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **10 Claims**

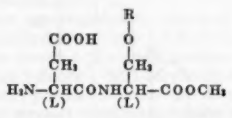
Hypocalcaemic peptide amides of the formula


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
H-Cys-Gly-Asn-Leu-Ser-Thr-Cys-X-Leu-Gly-Thr-Tyr-Thr-Gln-Asp-
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-Gly-Ala-
32
Pro-NH2

wherein X represents the radical of L-methionine, L-valine, L-norvaline, L-leucine, L-isoleucine, L-norleucine or L-α-aminobutyric acid and wherein at least one of the aminoacids in positions 11, 12, 16, 17, 19, 20, 22 and 24 is replaced by another aminoacid, namely L-threonine[11] by L-lysine, L-tyrosine[12] by L-leucine, L-phenylalanine[16] by L-Leucine, L-asparagine[17] by L-histidine, L-phenylalanine[19] by L-leucine, L-histidine[20] by L-glutamine, L-phenylalanine[22] by L-tyrosine and L-glutamine[24] by L-arginine.

3,798,204
ASPARTYL-(O-ALKYL)-SERINE METHYL ESTER SWEETENERS
Nobuo Nakajima, Hyogo, Hisashi Aoki, Osaka, Masahiko Fujino, Hyogo, and Osamu Nishimura and Mitsuhiro Wakimasu, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Aug. 20, 1971, Ser. No. 173,636
Claims priority, application Japan, Aug. 21, 1970, 45/73,597
Int. Cl. A23l *1/26;* **C07c** *103/52*
U.S. Cl. 260—112.5 **6 Claims**

Dipeptide ester sweeteners are provided herein of the formula:



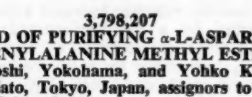
wherein R is tertiary butyl or tertiary amyl and its physiologically acceptable salt. The present invention also relates to methods of preparing the aforementioned compounds as well as sweetening compositions containing dipeptide esters.

3,798,205
DERIVATIVES OF THE KALLIKREIN INHIBITOR AND THEIR PRODUCTION
Eugen Werle and Hans Fritz, Munich, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of abandoned application Ser. No. 743,889, July 10, 1968. This application Nov. 5, 1971, Ser. No. 196,232
Claims priority, application Germany, July 26, 1967, F 53,061
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **5 Claims**

Novel derivatives of the kallikrein inactivator are provided which are polypeptidyl-kallikrein inhibitors or polypeptidyl-polykallikrein inhibitors. These are useful in the therapy and prophylaxis of pancreatitis, some form of shock and the treatment of hyperfibrinolytic bleeding. They are produced by reacting the kallikrein inactivator with an N-carboxy-anhydride of an α-amino acid in solution at a temperature of −5° C. to +15° C.

3,798,206
METHOD OF PRODUCING α-DIPEPTIDE ESTERS OF L-ASPARTIC ACID
Noboru Uchiyama, Naohiko Yasuda, and Tetsuo Yamatani, Kawasaki, Yasuo Ariyoshi and Koji Tol, Yokohama, and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Jan. 21, 1971, Ser. No. 108,555
Claims priority, application Japan, Jan. 31, 1970, 45/8,742; Feb. 23, 1970; 45/15,401; June 26, 1970, 45/55,722
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **10 Claims**

α-Dipeptide lower alkyl esters of L-aspartic acid of the formula



wherein R is lower alkyl, X is phenyl or p-hydroxyphenyl and the stereochemical configuration is L—L, are prepared by reacting a strong acid salt of L-aspartic anhydride with a lower alkyl ester of L-phenylalanine or L-tyrosine.

3,798,207
METHOD OF PURIFYING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER
Yasuo Ariyoshi, Yokohama, and Yohko Koguchi and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,671
Claims priority, application Japan, Oct. 26, 1970, 45/94,076
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **8 Claims**

α-L-aspartyl-L-phenylalanine methyl ester, a known artificial sweetener, is separated from the bitter tasting β-isomer and other impurities by converting it to the hydrochloride or hydrobromide which is practically insoluble in aqueous solvents 0.3 to 6.0 normal with respect to the hydrohalide.

3,798,208
MODIFICATION OF PROTEIN WITH ETHYLENIMINE
David M. Miller, Skaneateles, N.Y., assignor to Swift & Company, Chicago, Ill.
No Drawing. Filed May 8, 1972, Ser. No. 251,377
Int. Cl. A23j *3/02;* **C07g** *7/00*
U.S. Cl. 260—119 **8 Claims**

An improved method for preparing protein derivatives comprising reacting protein with ethylenimine in a non-aqueous medium in the presence of a Lewis acid catalyst. The reaction product is a modified protein characterized by an increased isoelectric pH.

3,798,209
1,2,4-TRIAZOLE NUCLEOSIDES

Joseph T. Witkowski, Laguna Niguel, and Roland K. Robins, Santa Ana, Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 149,017, June 1, 1971. This application Mar. 31, 1972, Ser. No. 240,252
Int. Cl. C07c *95/04*
U.S. Cl. 260—211.5 R 28 Claims

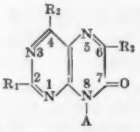
As antiviral agents and intermediates therefor, 3-substituted 1-(β-D-glycosyl)-1,2,4-triazoles, O-acylated analogs thereof, and 5'- and 3',5'-cyclic phosphates of the triazole nucleosides, "glycosyl" being a pentofuranosyl moiety, preferably one whose 2'-oxygen is trans to the triazole aglycon, e.g., xylofuranosyl, ribofuranosyl, 2'-O-methylribofuranosyl, etc., the triazole aglycon being 3-substituted with cyano, methylcarboxylate, carboxamidoxime, carboxamido-, thiocarboxamido, or carboxamidine. Preparation of these nucleosides is by silylation of the substituted triazole followed by glycosylation with the appropriate blocked glycosyl halide. Alternatively, acid-catalyzed fusion of the requisite 1,2,4-triazole with an O-acylated pentofuranose yields the nucleosides.

3,798,210
GLYCOSIDYL-PTERIDINES

Wolfgang Pfleiderer, Constance, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,350
Claims priority, application Switzerland, Jan. 6, 1970, 39/70; Nov. 18, 1970, 17,024/70
Int. Cl. C07c *95/04, 51/50*
U.S. Cl. 260—211.5 R 11 Claims

Compounds of the formula



(I)

wherein A stands for a member selected from 1-aldopentosidyl, 1-aldohexosidyl, partially desoxygenated 1-aldopentosidyl, partially desoxygenated 1-aldohexosidyl, one of said radicals with free hydroxyl groups, hydroxyl groups esterified by a member selected from lower alkanoyl and aroyl or etherified by aryl-lower alkyl, R_1, R_2 and R_3 each stands for a member selected from hydrogen, lower alkyl, aryl-lower alkyl, phenyl, lower alkyl phenyl, lower alkoxy phenyl, halogeno phenyl, trifluoromethyl phenyl, free amino, mono-lower alkylamino, di-lower alkylamino, aryl amino, N-aryl-N-lower alkylamino, hydroxy, lower alkoxy, aryl-lower alkoxy, halogen, mercapto, lower alkylmercapto, aryl-lower alkylmercapto, carboxy, lower alkoxy carbonyl and aryl-lower alkoxy carbonyl, their tautomers and salts are useful as antibacterial and antiviral agents.

3,798,211
PROCESS FOR REMOVING CYANIDE IONS FROM SOLUTIONS OF COBALT (I) CORRINOIDS

Leonard Mervyn, Ickenham, England, assignor to Glaxo Laboratories Limited, Greenford, England

Filed Nov. 30, 1970, Ser. No. 93,777
Claims priority, application Great Britain, Dec. 1, 1969, 58,631/69
Int. Cl. C07d *55/62*
U.S. Cl. 260—211.7 10 Claims

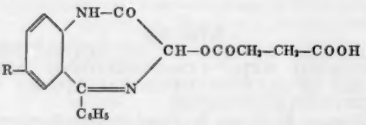
Free cyanide ions occurring in an alkaline solution of a cobalt (I) corrinoid formed by reduction of a corresponding cyano cobalticorrinoid, can be removed so that they no longer interfere in subsequent reactions of the cobalt (I) corrinoid: the removal is effected by providing a cyanide-complexing agent in said alkaline solution.

3,798,212
RESOLUTION OF BENZODIAZEPINE DERIVATIVES

Giancarlo Jommi, Milan, Francesco Mauri, Sesto San Giovanni, and Giovanna Riva, Milan, Italy, assignors to Ravizza S.A., Lausanne, Switzerland

No Drawing. Filed June 16, 1971, Ser. No. 153,851
Claims priority, application Great Britain, June 25, 1970, 30,851/70
The portion of the term of the patent subsequent to Apr. 4, 1972, has been disclaimed
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.30 7 Claims

The invention relates to the resolution into optical antipodes of racemic compounds of the general formula:



(I)

wherein R is NO_2, Cl, F or Br by differential solubility in acetone containing a small percentage of water of the corresponding salts with (+)ephedrine or (−)ephedrine.

3,798,213
7α-METHYL-20-SPIROXANE-3-ONES AND PROCESS

Glen E. Arth, Cranford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,677
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R 11 Claims

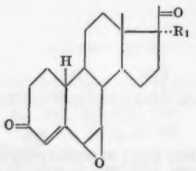
The invention disclosed herein relates to novel ring A unsaturated 7α-methyl-20-spiroxane-3-one compounds including 7α-methyl-20-spirox-4-ene-3-ones and their 19-nor and 19-nor-18-methyl derivatives, and $\Delta^{5(10)}$, $\Delta^{1,4}$,$\Delta^{4,9(10)}$ and $\Delta^{4,9(10),11}$ analogs thereof; and to processes for preparing these compounds from the corresponding 20-spiroxa-4,6-diene-3-one compound. These new ring A unsaturated 7α-methyl-20-spiroxane-3-one compounds are potent anti-estrogens, possess effective anti-implantation activity, and are useful in fertility control.

3,798,214
PROCESS FOR THE MANUFACTURE OF NEW STEROID EPOXIDES OF THE 19-NOR-PREGNENE SERIES

Georg Anner and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,562
Claims priority, application Switzerland, Feb. 5, 1971, 1,731/71
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R 6 Claims

The invention relates to new gestagenic compounds of the formula



(I)

wherein R_1 represents a free or esterified hydroxy group. The compounds are prepared by conventional methods.

They display a strong gestagenic action at low doses at which an ovulating inhibiting action is not present.

3,798,215

PROPADIENYL-SUBSTITUTED CARBINOLS

Eugene E. Galantay, Morristown, and Dietmar A. Habeck, Dover, N.J., assignors to Sandoz-Wander Inc., Hanover, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 39,546, May 21, 1970, Ser. No. 71,279, Sept. 10, 1970, and Ser. No. 114,080, Feb. 9, 1971, which is a continuation-in-part of application Ser. No. 778,777, Nov. 25, 1968, now abandoned. This application July 6, 1971, Ser. No. 160,057

The portion of the term of the patent subsequent to Mar. 6, 1990, has been disclaimed

Int. Cl. C07c *169/08*

U.S. Cl. 260—239.55 C 22 Claims

A process is provided for the preparation of 17β-hydroxy - 17α - propadienyl - substituted compounds of a steroidal nature, said compounds being useful as pharmaceutical agents.

3,798,216

9-FLUORO - 11β,21 - DIHYDROXY-16α,17-(2-PROPENYLIDENEDIOXY)-PREGNA - 1,4-DIENE-3,20-DIONE AND DERIVATIVES THEREOF

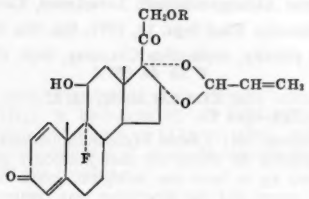
Jacques Robert Boissier, Paris, and Roger Ratouis, Saint Cloud, France, assignors to Societe Anonyme dite: Societe Industrielle pour la Fabrication des Antibiotique (S.I.F.A.), Puteaux, France

No Drawing. Continuation of abandoned application Ser. No. 14,196, Feb. 25, 1970. This application May 8, 1972, Ser. No. 251,513

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D 4 Claims

Pregnan derivatives of the general formula:



(1)

wherein R: hydrogen atom or acyl radical of a saturated aliphatic carboxylic acid, containing from 2 to 6 carbon atoms and eventually substituted by a free carboxylic group (—COOH), or by a salified carboxylic group (—COOA: A being an alkaline metal or the ammonium), said carboxylic group being separated from the —CO— group of the acyl radical by at least 2 carbon atoms.

These products are very useful drugs more particularly as antiinflammatory drugs.

The products are prepared by action of 9-fluoro-11β-16α,17,21 - tetrahydroxy-pregna-1,4-diene-3,20-dione with acrolein in the presence of an acid catalyst, and isolation of the resulting 9-fluoro-11β,21-dihydroxy-16α,17-(2-propenylidenedioxy)-pregna-1,4-diene-3,20-dione, or esterification of said product with the anhydrid of an acid of formula R'—OH [R': acyl radical of a saturated aliphatic carboxylic acid containing from 2 to 6 carbon atoms and eventually substituted by a free carboxylic group (—COOH)] and eventual salification by an alkaline agent.

3,798,217

NOVEL C-16,17 SPIRO-ORTHOESTER STEROIDS AND PREPARATION

Jack Ackrell, Norfolk, England, and John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Apartado, Panama

No Drawing. Continuation-in-part of application Ser. No. 37,292, May 14, 1970, now Patent No. 3,716,529. This application Aug. 11, 1972, Ser. No. 279,755

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D 5 Claims

C–16,17 spiro-orthoesters and method of preparation involving reacting a 16,17-dihydroxy steroid with an O-alkyl alkanoic acid lactonium tetrafluoroborate in the presence of a base. The novel spiro-orthoesters are useful antiinflammatory agents.

3,798,218

2-ISOPROPYL TETRAHYDRO-1,3-SUBSTITUTED OXAZINES

Claude P. Fauran and Colette Douzon, Paris, Gerald J. Huguet, Malesherbes, Guy M. Raynaud, Paris, and Yves A. Bailly, Nanterre, France, assignors to Delalande S.A., Courbevoie, France

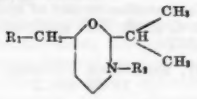
No Drawing. Filed May 9, 1972, Ser. No. 251,776

Claims priority, application France, May 11, 1971, 7116981

Int. Cl. C07d *87/06*

U.S. Cl. 260—246 R 4 Claims

Compounds of the formula

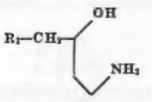


in which:

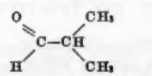
R_1 is methoxy, phenoxy or morpholino, and

R_2 is hydrogen, benzoyl, substituted benzoyl, p-toluenesulfonyl, alkylaminocarbonyl or arylaminocarbonyl,

is prepared by cyclizing



with



to produce the compounds of the first-named formula in which R_2 is hydrogen. Compounds of the first-named formula in which R_2 is other than H are prepared by acylation. The compounds possess analgesic, antiinflammatory, analeptic respiratory, hypotensive, spasmolytic and antiulcerous properties.

3,798,219

3-(METHYLSULFINYL)CINNOLINONES AND THEIR DERIVATIVES

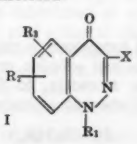
Maximilian von Strandtmann, Rockaway, John Shavel, Jr., Mendham, Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,293

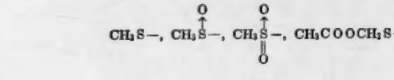
Int. Cl. C07d *51/08*

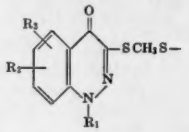
U.S. Cl. 260—250 A 11 Claims

3-substituted cinnolinones having the following structural formula are disclosed:



wherein R_1 is hydrogen, lower alkyl, aralkyl or acyl and R_2 and R_3 are hydrogen, halogen, lower alkoxy or lower alkyl, and X is





These compounds are useful as immunosuppressants.

3,798,220

PROCESS FOR PREPARING 4-HYDROXY 5-SUBSTITUTED PYRIMIDINES AND PRODUCTS OBTAINED

Kurt Klemm and Erhard Langenscheid, Constance, Germany, assignors to Byk-Gulden Lomberg Chemische Fabrik G.m.b.H., Constance, Germany

No Drawing. Continuation-in-part of application Ser. No. 864,168, Oct. 6, 1969. This application Nov. 4, 1969, Ser. No. 874,077

Claims priority, application Germany, Nov. 4, 1968, P 18 06 867.2

Int. Cl. C07d

U.S. Cl. 260—251 R **14 Claims**

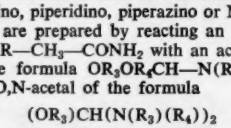
The process is useful to make intermediates useful to make drugs.

4-hydroxy 5-substituted pyrimidines of the formula

wherein R is —CN, —$COOR_1$ or —$CONR_1R_2$ in which R_1 and R_2 are the same or different alkyl groups, preferably lower alkyl containing up to 4 carbons; cycloalkyl or aryl, such as cyclohexyl, phenyl, benzyl, etc.; or when taken together with the N atom to which they are attached, are morpholino, piperidino, piperazino or N-methylpiperazino which are prepared by reacting an acid amide of the formula R—CH_3—$CONH_2$ with an acid amide O,O-acetal of the formula OR_3OR_4CH—$N(R_3)(R_4)$ or an acid amide O,N-acetal of the formula

$$(OR_3)CH(N(R_3)(R_4))_2$$

wherein R_3 and R_4 may be the same as R_1 and R_2, preferably lower alkyl, to form a compound of the formula



and subjecting said compound to ring closure, preferably with an ammonium salt solution or an ammonium salt solution containing ammonia, to form the pyrimidine ring by splitting off the two secondary amines

$$HN(R_3)(R_4)$$

3,798,221

COMPOUNDS OF PROPANOLOL AND BARBITURIC ACIDS FOR THE TREATMENT OF CARDIOVASCULAR AILMENTS

Francis A. Langlumé, Paris, France, assignor to Etablissements Nativelle S.A.R.L., Paris, France

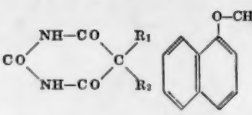
No Drawing. Continuation of abandoned application Ser. No. 697,303, Jan. 12, 1968. This application Aug. 2, 1971, Ser. No. 168,386

Claims priority, application France, Jan. 16, 1967, 91,205

Int. Cl. C07d *51/22*

U.S. Cl. 260—258 **1 Claim**

The invention has for its object new compounds having anti-arrhythmic, hypotensive and sedative properties particularly useful for the treatment of cardiovascular disorders, of the formula:



(I)

wherein R_1 and R_2, which may be the same or different, represent hydrogen, alkyl, cycloalkyl, aryl or aralkyl radicals, each of these radicals, if desired, carrying one or halogenated substituents. It also contemplates a process for the preparation of said compounds and a therapeutic composition containing same as active ingredient.

3,798,222

SULFONATE DERIVATIVES OF 1,4-BIS (PROPIONYL)PIPERAZINE

Alexander Senning, Braband, and Hans Christian Buchholt, Risskov, Denmark, and Robert Bierling, Wuppertal-Elberfeld, Dieter Steinhoff, Bochum, and Gerhard Trossmann, Bonn-Bad Godesberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,501

Claims priority, application Germany, Sept. 18, 1970, P 20 46 087.1

Int. Cl. C07d *51/70, 51/72*

U.S. Cl. 260—268 C **6 Claims**

Derivatives of 1,4-bis[3-(methylsulfonyloxy)propionyl]piperazine in which the methylsulfonyl groups are substituted by at least one halogeno, cyano or methylsulfonyl group and the piperazine ring optionally bears up to two lower alkyl groups are cytostatic agents. The compounds, of which 1,4-bis[3-(chloromethylsulfonyloxy)propionyl]piperazine is a typical embodiment, are obtained through the reaction of the appropriate 1,3-bis(3-iodopropionyl)piperazine and a salt of a substituted methanesulfonic acid.

3,798,223

OXOHEXAHYDROPYRAZINOISOQUINOLINES

Sydney Archer and John W. Schulenberg, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Application Apr. 8, 1970, Ser. No. 26,767, now Patent No. 3,684,813, which is a division of application Ser. No. 826,681, May 21, 1969, now Patent No. 3,557,120, which in turn is a continuation-in-part of abandoned application Ser. No. 569,021, Aug. 1, 1966. Divided and this application Dec. 7, 1971, Ser. No. 205,751

Int. Cl. C07d *51/72*

U.S. Cl. 260—268 TR **14 Claims**

3 - oxo-1,3,4,6,7,11b-hexahydro - 9,10 - dimethoxy-2H-pyrazino[2,1-a]isoquinolines and 2,4-dioxo-1,3,4,6,7,11b-

hexahydro-9,10-dimethoxy-2H - pyrazino[2,1-a]isoquinolines, prepared by cyclization reactions of the corresponding 1 - aminomethyl-1,2,3,4-tetrahydro-6,7-dimethoxyisoquinolines and 1,2,3,4-tetrahydro - 6,7 - dimethoxy-1-isoquinolinecarboxamides, respectively, are intermediates in the preparation of 1,3,4,6,7,11b-hexahydro - 9,10 - dimethoxy - 2H - pyrazino[2,1-a]isoquinolines, which possess sedative, tranquilizing and related pharmacodynamic effects.

3,798,224

NAPHTHALIMIDE HYDRAZINAMIDES

Seiji Hotta, Hirakata, and Takashi Akamatsu, Ashiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

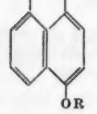
No Drawing. Filed Dec. 22, 1970, Ser. No. 100,816

Claims priority, application Japan, Dec. 30, 1969, 45/1,862, 45/1,863, 45/1,864, 45/1,865, 45/1,866; May 8, 1970, 45/39,536; May 23, 1970, 45/44,291; July 15, 1970, 45/62,427; Sept. 18, 1970, 45/82,-103, 45/82,104; Nov. 6, 1970, 45/98,113; Nov. 12, 1970, 45/100,011, 45/100,012, 45/100,013

Int. Cl. C07d *39/00*

U.S. Cl. 260—281 **3 Claims**

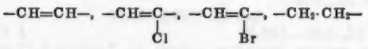
A naphthalimide derivative having the formula



wherein

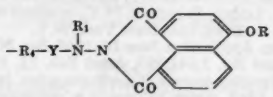
R is an alkyl, a cycloalkyl, an aralkyl, a haloalkyl, an alkoxyalkyl, a hydroxyalkyl, an N,N-dialkylaminoalkyl, an unsubstituted or halogen-, alkyl-, alkoxy- or hydroxy-substituted aryl, or an ammoniumalkyl; X is a group of the formula,

wherein A is



or an unsubstituted or halogen-substituted arylene, or a group of the formula,

wherein R_1 is hydrogen, an alkyl, phenyl, a hydroxyalkyl, or an alkoxyalkyl; Y is —CO—, —COO—, —$CONR_3$— (where R_3 is hydrogen or an alkyl), or —SO_2—; R_2 is hydrogen, an alkyl, a cycloalkyl, an aralkyl, a haloalkyl, an alkyl- or aryl-substituted aminoalkyl, an unsubstituted or halogen-, alkyl-, alkoxy-, hydroxy-, amino- or alkylamino-substituted aryl, a group of the formula,



(where R, R_1 and Y are as defined above and R_4 is a bivalent group), or a group of the formula,

$$—R_5—Q^+ \cdot a^-$$

(where R_5 is direct linkage or a bivalent group; Q^+ is a substituted ammonium, a cycloammonium or a hydrazinium; and a^- is an anion),

which is useful for optically brightening an organic polymer material.

3,798,225

3(2H)-ISOQUINOLONES

William Eugene Kreighbaum and William Timmey Comer, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,197

Int. Cl. C07d *35/28*

U.S. Cl. 260—286 R **19 Claims**

New 2-substituted-3(2H)-isoquinolones and 2-substituted-3-alkoxyisoquinolines are disclosed. They are orally active hypotensives and peripheral vasodilators with an extended duration of action. Representative embodiments of this invention are 6,7-dimethoxy-2-methyl-1-veratryl - 3(2H) - isoquinolone hydrochloride, 2-allyl-6,7-dimethoxy - 1 - veratryl - 3(2H) - isoquinolone hydrochloride, 2 - cyclopropyl - 6,7 - dimethoxy - 1-veratryl-3(2H) - isoquinolone hydrochloride, 2-amino-6,7-dimethoxy - 1-veratryl-3(2H)-isoquinolone hydrochloride, and 3-ethoxy-6,7-dimethoxy-1-veratrylisoquinoline.

3,798,226

3-ACYLAMINO-4-PHENYLQUINOLINES CARRYING A SUBSTITUENT ON THE BENZENE RING

Kanji Meguro, Nishinomiya, Yutaka Kuwada, Ashiya, Teruji Henmi, Amagasaki, and Togo Yamano, Nara, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

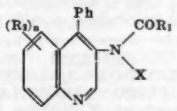
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,853

Claims priority, application Japan, Apr. 4, 1970, 45/28,850

Int. Cl. C07d *33/56*

U.S. Cl. 260—287 R **11 Claims**

Compounds of the general formula



wherein

R_1 is hydrogen, alkyl, cycloalkyl, alkylene, or aralkyl, such groups being substituted or unsubstituted,

X is hydrogen or an acyl group of the formula —COR_1,

R_2 is halogen, trifluoromethyl, alkyl, alkoxy, nitro, amino or an acylamino group of the formula —$NHCOR_1$,

n is an integer of 1 to 4, and

Ph is substituted or unsubstituted phenyl

are antitrichomonas or antiulcer agents.

3,798,227

PROCESS OF CYCLIZING ALKYLIDENE SUBSTITUTED AMINOMETHYLENEMALONATES

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug, Inc., New York, N.Y.

No Drawing. Application June 10, 1968, Ser. No. 735,566, now Patent No. 3,642,797, dated Feb. 15, 1972, which is a continuation-in-part of application Ser. No. 640,359, May 22, 1967, which in turn is a continuation-in-part of application Ser. No. 464,850, June 17, 1965, both now abandoned. Divided and this application Oct. 19, 1970, Ser. No. 82,170

Claims priority, application Great Britain, June 15, 1966, 26,787/66

Int. Cl. C07d *33/18*

U.S. Cl. 260—289 **4 Claims**

Alkylidene Ar-aminomethylenemalonates, where Ar is an aromatic radical having one or two aromatic rings which can be benzenoid or five- or six-membered heteroaromatic, are prepared by reacting the appropriate aromatic-amine with a mixture of a trialkyl orthoformate or trialkyl orthoacetate and an alkylidene malonate. The alkylidene Ar-aminomethylenemalonates are then cyclized by heating to provide an improved process for preparing various heterocyclic compounds, e.g., a 4-hydroxyquinoline from an alkylidene anilinomethylenemalonate, a 4H-pyrido[1,2-a]pyrimidin-4-one from an alkylidene 2-pyridylaminomethylenemalonate, a 4H - pyrimido[1,2 - a] pyrimidine-4-one from an alkylidene 2-pyrimidylaminomethylenemalonate. The cyclized products are useful as intermediates for the preparation of antimalarials and anti-inflammatory agents.

3,798,228

METHOD FOR THE PREPARATION OF DIFLUOROPYRIDINES

Max M. Boudakian, Pittsford, and Stanley J. Chiras, Hilton, N.Y., assignors to Olin Corporation

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,025

Int. Cl. C07d *31/26*

U.S. Cl. 260—290 HL **6 Claims**

This invention relates to the preparation of difluoropyridines and substituted difluoropyridines by the simultaneous replacement of two amino groups by diazotization of selected diaminopyridines in hydrogen fluoride.

3,798,229

PROCESS FOR PREPARING 1,3,4-THIADIAZOLE-2-THIOL COMPOUNDS

Kazuo Kariyone, Kyoto, Hirokichi Harada, Nishinomiya, Masaru Kurita, Takatsuki, Yutaka Ueda, Toyonaka, Takahiro Furuhashi, Fukuoka, Hitoshi Nakamura, Toyonaka, and Hirotoshi Watanabe, Ikeda, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,192

Claims priority, application Japan, Dec. 30, 1970, 46/129,466

Int. Cl. C07d *91/62*

U.S. Cl. 260—302 SD **4 Claims**

A process for preparing 1,3,4-thiadiazole-2-thiols which comprises reacting a salt of dithiocarbazic acid with ortho-acid esters or with iminoethers or with thio-acid esters.

3,798,230

O,O-DIALKYL-O-[1-OXA-2,4-DIAZOLIDINON-5-YL-3]-THIONOPHOSPHATES

Peter Beutel, Mannheim, Karl-Heinz Koenig, Frankenthal, Wolfram Dietsche, Altrip, and Heinrich Adolphi, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,231

Claims priority, application Germany, Mar. 5, 1970, P 20 10 396.2

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 A **6 Claims**

O,O-dialkyl-O-[1 - oxa - 2,4 - diazolidinon-5-yl-3]-thionophosphates having a substituent in the 4-position, said thionophosphates having a good insecticidal action and a process for controlling insects with these compounds, such compounds including O,O-diethyl-O-[4-n-propyl-1-oxa - 2,4 - diazolidinon-5-yl-3]-thionophospnate.

3,798,231

BIS-AROXAZOLYL-PARA-POLYPHENYLENES

Fritz Fleck, Bottmingen, Basel-Land, Hans Kittl, Riehen, Basel-Stadt, and Horst Schmid, Munchenstein, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

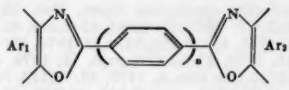
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,791

Claims priority, application Switzerland, Oct. 12, 1970, 14,971/70

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **11 Claims**

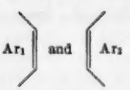
Bis-aroxazolyl-para-polyphenylenes of the formula



(I)

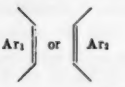
where

the value of *n* is at least 3 but not greater than 8 and



represent benzene or phenanthrene radicals which may be substituted and, if they are benzene radicals, each radical bears not more than one second-order (meta directing) substitutent,

and, if *n* has the value 3 the molecule contains at least one-second-order (meta-directing) substituent bound to one of the benzene radicals



which are excellent brighteners for polyolefins, polyester or polyamides.

3,798,232

2-(FURFURYLAMINO)-1-(2-IMIDAZOLIN-2-YL)-2-IMIDAZOLINE HYDROIODIDE

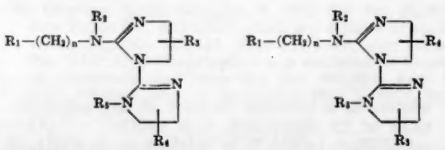
Raymond R. Wittekind, Morristown, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 6,639, Jan. 28, 1970, now Patent No. 3,666,767, dated May 30, 1972. This application May 15, 1972, Ser. No. 253,074

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **1 Claim**

The present invention relates to 2-amino-1-(2-imidazolin-2-yl)-2-imidazolines, the free base of which has the following structural formulas:



wherein

R_1 is hydrogen, lower alkyl, cycloalkyl, aryl, substituted aryl, heterocyclic, substituted heterocyclic or aryloxy;

R_2 is hydrogen, lower alkyl, aryl and substituted aryl; or R_1 and R_2 taken together with the nitrogen atom to which they are attached form a heterocyclic ring;
R_3 and R_4 are hydrogen, lower alkyl, aryl or substituted aryl;
R_5 is hydrogen, lower alkyl, aryl or substituted aryl;
n is an integer from 0 to 10.

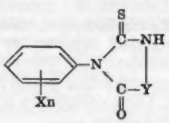
The compounds of this invention are useful as anti-arrhythmic agents as well as antibacterial agents.

3,798,233
3-HALOPHENYL DERIVATIVES OF THIOHYDANTOINS

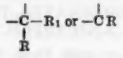
Keiichiro Akiba, Ikeda, Akira Fujinami, Ashiya, Akihiko Mine, Toyonaka, Takeo Satomi, Takarazuka, and Naganori Hino, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Jan. 15, 1971, Ser. No. 106,909
Claims priority, application Japan, Jan. 21, 1970, 45/5,955
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 **5 Claims**

A thiohydantoin derivative having the formula,



wherein X is a halogen atom, n is an integer of 1 to 3, and Y is



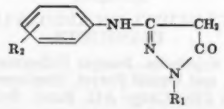
in which R_1 and R_2 each are hydrogen atom, an alkyl, a hydroxyalkyl, an alkenyl, an alkoxycarbonyl or an alkoxycarbonylalkyl group, and R is an alkylidene or an alkoxycarbonylalkylidene group, which may be useful as herbicides.

3,798,234
PROCESS FOR THE PREPARATION OF 3-ANILINO-PYRAZOLONES-(5)

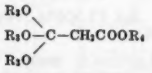
Ernst Meier and Karl Kuffner, Munich, and Hans Glockner, Pullach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,701
Claims priority, application Germany, Aug. 29, 1970, P 20 42 920.3
Int. Cl. C07d *49/16*
U.S. Cl. 260—310 A **6 Claims**

Preparation of 3-anilino-pyrazolone-(5) of the general formula



by reacting a β,β,β-trialkoxy propionic acid alkyl ester of the general formula



with a substituted aniline, and condensation of the intermediate product with a hydrazine of the formula

$$R_1—NH—NH_2$$

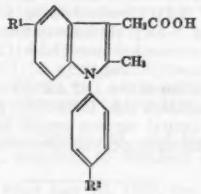
R_1 is an alkyl, aralkyl or aryl, substituted or unsubstituted, group
R_2 is H or alkyl, alkoxy, alkylthio, halogen, carboxy sulfo acid, alkylsulfonic, carbamido, acylamino, sulfofluorido, cyano, or nitro group
R_3 and R_4 are a short chain alkyl group.

3,798,235
NOVEL METHOD FOR PRODUCING 1-PHENYL-3-INDOLYLACETIC ACID DERIVATIVES

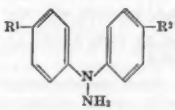
Hisao Yamamoto, Nishinomiya, Atsuko Hirohashi, Ashiya, and Takahiro Izumi and Masao Koshiba, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,182
Claims priority, application Japan, Dec. 9, 1967, 42/79,170
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 R **1 Claim**

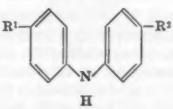
1-phenyl-3-indolylacetic acid derivatives having anti-inflammatory, analgesic and anti-pyretic activities, of the formula,



wherein R^1 is an alkyl group having up to 4 carbon atoms or an alkoxy group having up to 4 carbon atoms, and R^2 is a hydrogen or halogen atom, can be produced by contacting levulinic acid with diphenylamine derivatives of the formula,



wherein R^1 and R^2 are defined as above, which are prepared by contacting diphenylamines of the formula,

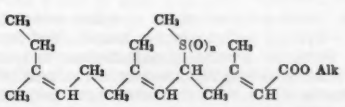


3,798,236
INSECTICIDAL TRIENIC COMPOUNDS AND PROCESS

Daniel Hainaut, Villemomble, Edmond Toromanoff, Paris, and Jean-Pierre Demoute, Montreuil-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed July 25, 1972, Ser. No. 275,104
Claims priority, application France, July 27, 1971, 7127448
Int. Cl. C07d *65/08*
U.S. Cl. 260—327 TH **13 Claims**

Products having the formula:



wherein *n* represents an integer from 0 to 1 and Alk represents an alkyl having from 1 to 5 carbon atoms. These compounds possess remarkable insecticidal properties and are intermediates in the synthesis of the juvenile hormone.

3,798,237

THIEPIN DERIVATIVES

Hans Blattner and Walter Schindler, Rieben, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 16, 1970, Ser. No. 98,927, now Patent No. 3,682,959. Divided and this application June 15, 1972, Ser. No. 263,045

Int. Cl. A61k *27/00*

U.S. Cl. 260—332.5 **3 Claims**

Compounds of the class of 2,3-dihydro-1H-thieno-[2',3':2,3][1]benzothiepino[4,5 - c]pyrrole, 2,3-dihydro-1H-thieno[3',2':2,3][1]benzothiepino[4,5-c]pyrrole, and the N-allyl and N-alkyl derivatives thereof are prepared from 4,5-disbromomethylthieno[3,2-b][1]benzothiepin or 4,5 - bisbromomethylthieno[2,3 - b][1]benzothiepin and amines, these compounds and the pharmaceutically acceptable acid addition salts thereof have a depressant effect upon the central nervous system and are active ingredients of pharmaceutical compositions.

3,798,238

TRIMELLITIC ACID ANHYDRIDE PRODUCT RECOVERY FROM PSEUDOCUMENE OXIDATION EFFLUENT

Delbert H. Meyer, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 24, 1971, Ser. No. 118,292

Int. Cl. C07c *63/02, 63/32*

U.S. Cl. 260—346.4 **4 Claims**

Fluid effluent from pseudocumene oxidation under liquid phase conditions or concentrate thereof is subjected to simultaneous stripping of reaction medium and thermal conversion of its trimellitic acid content to crude trimellitic acid anhydride followed by vacuum flash distillation or evaporation of the acid anhydride from a mixture of such crude acid anhydride and a small arount of strong mineral acid to recover product acid anhydride. Such acid anhydride recovery avoids subjecting said fluid oxidation effluent to crystallization for trimellitic acid recovery which leaves 30 to 40 percent of the oxidation product tricarboxylic acid dissolved in the reaction medium mother liquor requiring further processing to obtain such solute for conversion into the desired acid anhydride product.

3,798,239

NAPHTHYLOXYALKOXYANTHRAQUINONE DYES

Guido Roger Genta, 38 Church St., Lock Haven, Pa. 17745

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,705

Int. Cl. C09b *1/54*

U.S. Cl. 260—380 **3 Claims**

New anthraquinone dyes, 1-amino-2-naphthyloxy-alkoxy-4-hydroxy anthraquinones, are provided. Synthetic textile fibers, in particular, polyethylene terephthalate fibers, when dyed with the new dyes, are colored in bright pink shades which are substantive, light fast, and sublimation resistant.

3,798,240

3-(HYDROXYMETHYL)CHROMONES

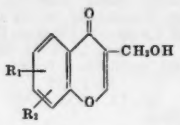
Maximilian von Strandtmann, Rockaway, John Shavel, Jr., Mendham, Sylvester Klutchko, Hackettstown, and Marvin P. Cohen, New Milford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,765, Feb. 4, 1971. This application Nov. 24, 1972, Ser. No. 309,329

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **26 Claims**

The present invention relates to compounds of type I:



I

wherein R_1 and R_2 are hydrogen, halogen, alkyl, aralkyl, aryl, alkoxy, acylamino, hydroxy, or taken together R_1 and R_2 form an aromatic ring. These compounds are prepared from the corresponding o-hydroxy-ω-(methylsulfinyl)acetophenones. These compounds are useful in alleviating allergic manifestations.

3,798,241

BIDENTATE COORDINATES, THEIR MANUFACTURE AND APPLICATION

Henri Kagan, Orsay, and Tuan Phat Dang, Antony, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants

No Drawing. Filed Dec. 7, 1971, Ser. No. 205,744

Claims priority, application France, Dec. 10, 1970, 7044632

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **4 Claims**

Bidentate coordinates of the formula $R_2X—R'—YR_2$, in which X and Y are phosphorus, arsenic, antimony or nitrogen, R' is a hydrocarbon group containing an asymmetric carbon atom and the R groups are hydrocarbon radicals, may be associated with rhodium complexes to yield hydrogenation catalysts useful in asymmetric synthesis. The synthesis of optically active aminoacids or amines is concerned.

3,798,242

N,N'-DIGLYCIDYL-DICARBOXYLIC ACID DIANILIDES

Hans Batzer, Arlesheim, Juerger Habermeier, Pfeffingen, Basel-Land, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,234

Claims priority, application Switzerland, Sept. 25, 1970, 14,268/70

Int. Cl. C07d *1/04*

U.S. Cl. 260—348 A **2 Claims**

Compounds of aromatic amines with polycarboxylic acids which possess at least 2 glycidyl groups bonded to the nitrogen atoms of the amide groups, such as, for example, N,N'-diglycidylsebacic acid dianilide or N,N'-diglycidyltetrahydrophthalic acid dianilide. These compounds, together with curing agents for epoxide resins, are suitable for the manufacture of mouldings, coatings or adhesive bonds.

3,798,243
PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONE

Istvan Toth, Bottmingen, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,459
Claims priority, application Switzerland, Dec. 22, 1970, 18,948/70; June 10, 1971, 8,411/71; July 27, 1971, 11,038/71
Int. Cl. C09b *1/00*
U.S. Cl. 260—369 **13 Claims**

By nitration of anthraquinone in an excess of concentrated nitric acid 1-nitroanthraquinone with a very low content of nitration by-products, especially β- and dinitroanthraquinones can be obtained in a very short time if 1 mole of anthraquinone is nitrated with at least 20 moles of nitric acid of at least 90% strength at temperatures between −40° and +35° C. After separation of the solid nitration product the mother lye can be regenerated and used again for nitration. The nitration can be carried out with great advantage in a continuous manner.

3,798,244
PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONE SUBSTANTIALLY FREE FROM DINITROANTRAQUINONE

Fred Mueller, Munchenstein, Basel-Land, and Rudolf Winkler, Reinach, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

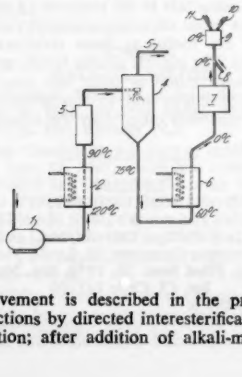
No Drawing. Filed Feb. 14, 1972, Ser. No. 226,326
Claims priority, application Switzerland, Feb. 16, 1971, 2,251/71
Int. Cl. C09b *1/00*
U.S. Cl. 260—369 **8 Claims**

Disclosed is a process for the removal of dinitroanthraquinone impurities from a mixture containing 1-nitroanthraquinone and such impurities, the process comprising treating the mixture with an aqueous solution of an alkali metal or ammonium sulphite with heating, at least 0.5 part by weight of the sulphite being employed to each part by weight of the mixture.

3,798,245
PROCESS FOR INTERESTERIFICATION OF A MIXTURE OF GLYCERIDES

Alex Maarten van Buren, Barendrecht, and Aloysius Bernardus Maria Cloosterman, Johannes Henricus Maria Rek, and Hendrik Frits Zock, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,261
Claims priority, application Great Britain, Apr. 13, 1972, 17,041/72
Int. Cl. C07c *53/00, 57/00, 59/00*
U.S. Cl. 260—398 **1 Claim**



An improvement is described in the preparation of glyceride-fractions by directed interesterification followed by fractionation; after addition of alkali-metal to form the interesterification catalyst the mixture is degassed. By use of this improvement an excellent yield of a polyunsaturated fraction can be obtained from sunflower seed oil.

3,798,246
PROCESS FOR PREPARING SOYBEAN PHOSPHATIDES

Hideo Shimazaki, Nobuhiro Mitsuura, and Shuji Tsukamoto, Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,746
Int. Cl. C07f *9/02*; A23j *7/00*
U.S. Cl. 260—403 **8 Claims**

Crude phosphatides recovered from soybean oil in a conventional manner are purified of undesirable color and odor by contacting a solution thereof in n-hexane with activated silica gel for at least 20 minutes, separating the silica gel from the solution, and evaporating the solvent. The purified material has a lighter color, more pleasing odor and flavor, and reduced acid and peroxide values. The silica gel may be returned to the process after washing in lower alkanols.

3,798,247
OIL SOLUBLE ALIPHATIC ACID DERIVATIVES OF MOLECULAR WEIGHT MANNICH CONDENSATION PRODUCTS

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed July 13, 1970, Ser. No. 54,558
Int. Cl. C09f *7/00*
U.S. Cl. 260—404.5 **2 Claims**

Novel aliphatic acid derivatives of high molecular weight Mannich condensation products of (1) high molecular weight alkyl-substituted hydroxy aromatic compounds whose alkyl-substituent has a number average molecular weight ($\overline{M}n$) from about 600–100,000, (2) a compound containing at least one HN< group, (3) an aldehyde in the respective molar reactant ratio of 1:0.1–10:1.0–10, and (4) 0.1–10.0 weight percent of an aliphatic acid having at least 6 carbon atoms are oil soluble and impart highly efficient ashless type (metal free) dispersant-detergent properties to lubricant oil addition agents. Lubricating oils containing these compositions provide a high degree of protection against the deposition of sludge and varnish and corrosion when used as crankcase lubricants.

3,798,248
ARYL COPPER COMPOUNDS AND THE SALT COMPLEXES THEREOF

Gerard van Koten, Utrecht, and André J. Leusink, Leusden Zuid, Netherlands, assignors to International Copper Research Association, New York, N.Y.

No Drawing. Filed June 14, 1971, Ser. No. 152,990
Claims priority, application Netherlands, July 2, 1970, 7009840
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **23 Claims**

This invention relates to arylcopper compounds having the general formula

$$CuY_pAr[(CH_2)_nX]_m$$

wherein Y represents a halogen atom or an alkyl, alkoxy, aryl or aryloxy radical, p is a number from 0 to 2, Ar is an aryl radical, n is a number from 0 to 6, X represents the radical ZRR′, OR or SO_2NRR' in which Z is an atom taken from Group V of the Periodic Table of the Elements and R and R′ each is an alkyl, aralkyl, cycloalkyl or aryl radical and m is a number from 1 to 3 and the salt complexes thereof.

The arylcopper compounds and salts thereof of this invention have numerous uses as chemical intermediates. For example, the presence of the stable copper-carbon bond permits the compounds to undergo exchange type

reactions wherein the copper atom is replaced by various organo groups. In addition, the oxidation and/or pyrolysis of the arylcopper compounds of this invention results in symmetrical biarylic compounds which are useful in the preparation of various known synthetic dyestuffs.

The arylcopper compounds and salt complexes thereof of this invention are also useful as toxins against various pest organisms. Particular compounds have been found to be quite selective as mollusicicides and algicides and may advantageously be formulated as the active ingredient in anti-fouling paints, particularly marine paints and in petroleum products to prevent microbial contamination and degradation of the same. The metal salt complexes in which the stability of the copper-carbon bond is enhanced as well as the arylcopper compounds per se, have been found to be effective catalysts in various types of chemical reactions including oxidation reactions and as catalysts for oligomerization and polymerization of unsaturated monomers such as the olefins.

3,798,249

CATALYST SYSTEM FOR THE POLYMERIZATION OF EPOXIDES

Henricus G. J. Overmars, Zeist, and Jan G. Noltes, Huis ter Heide, Netherlands, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

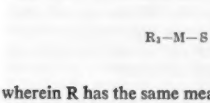
No Drawing. Filed June 23, 1971, Ser. No. 156,027

Claims priority, application Netherlands, July 2, 1970, 7009841

Int. Cl. C07f *3/06, 7/22, 7/24*

U.S. Cl. 260—429.9 **11 Claims**

A catalyst system for polymerizing epoxides which comprises a complex formed by reacting (a) a diorganozinc compound having the formula RZnR′, wherein R represents a substituted or unsubstituted alkyl radical having from 1 to 6 carbon atoms or a substituted or unsubstituted aryl radical having from 6 to 8 carbon atoms and R′ is the same as R or an alkoxy, aryloxy or diarylamine radical and (b) a triorganometal thiolate compound having the formula



wherein R has the same meaning as above and R″ and R‴ are selected from the group of radicals including hydrogen, methyl, hydroxymethyl, chloromethyl, the alkyl radicals $(CH_2)_n—CH_3$ in which n may be 1 to 16, and substituted and unsubstituted phenyl, and M is the metal silicon, germanium, tin or lead. The polymerization process using relatively small amounts of this catalyst system gives excellent yields of polymers with high crystallinity.

3,798,250

TETRAALKYLCHROMIUM COMPOUNDS

Walter M. Kruse, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,018, Feb. 2, 1971. This application July 7, 1972, Ser. No. 269,693

Claims priority, application Canada, Dec. 30, 1971, 131,388

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 R **5 Claims**

A new class of organochromium compounds are described, namely, tetravalent chromium compounds having the formula Y_4Cr where Y is alkyl, cyclohexyl-substituted alkyl or phenyl-substituted alkyl. Typical compounds are tetra(neopentyl)chromium, tetra(cyclohexylmethyl)chromium and tetra(neophyl)chromium. These compounds are new catalysts for the polymerization of 1-olefins and can be used in solution or extended on a solid support such as silica.

3,798,251

ALKYL FLUOROHEXAHALOGENOISOPROPOXYCARBOXYLATE SILICON DERIVATIVES AND POLYMERS AND COPOLYMERS THEREOF

Francois Meiller, Palaiseau, France, assignor to Produits Chimiques Pechiney-Saint Gobain, Neuilly-sur-Seine, France

No Drawing. Filed June 30, 1971, Ser. No. 158,614

Claims priority, application France, July 6, 1970, 7024957

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 B **3 Claims**

This invention is addressed to derivatives of alkyl fluorohexahalogenoisopropoxycarboxylate silicon derivatives, and polymers and copolymers formed thereof. The silicon derivatives of the present invention are useful as intermediates in the preparation of such polymers and copolymers which are useful as lubricants, as water repellent and oil repellent agents and as solvent resistant fluorinated elastomers.

3,798,252

PROCESS FOR THE ADDITION OF SILICON COMPOUNDS WITH Si-BONDED HYDROGEN TO COMPOUNDS WITH ALIPHATIC MULTIPLE BONDS

Siegfried Nitzsche, Ignaz Bauer, Werner Graf, and Norbert Zeller, Burghausen, West Germany, assignor to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed June 22, 1972, Ser. No. 265,114

Claims priority, application Germany, June 25, 1971, P 21 31 741.9

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 E **3 Claims**

A process for the addition of silicon compounds with Si-bonded hydrogen to compounds with aliphatic multiple bonds in the presence of platinum catalysts which are obtained from the reaction of chloroplatinic acid and ketones.

3,798,253

BICYCLIC OLEFINIC POLYOXYALKYLENE POLYMERS AND SILOXANE-POLYOXYALKYLENE COPOLYMER DERIVATIVES THEREOF

Edward A. Rick, Charleston, W. Va., and George M. Omietanski, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,595

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 B **17 Claims**

This invention relates to novel polyoxyalkylene polymers characterized by certain bicyclic olefinic endblocking groups (e.g., norbornenyl end-blocking groups). The novel polymers readily undergo addition reactions with siloxanes containing SiH in the presence of chloroplatinic acid to produce novel siloxane-polyoxyalkylene block copolymers that are useful as foam stabilizers for polyurethane foams. The olefinic double bonds under go relatively little isomerization or other side reactions during such addition reactions and so the products are relatively free of materials other than the desired block copolymers.

3,798,254

SUBSTITUTED S-DICHLOROMETHYL ORGANOTHIOSULFONATES AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,252

Int. Cl. C07c *141/00*

U.S. Cl. 260—453 R **8 Claims**

Substituted S-dichloromethyl organothiosulfonates are prepared from substituted dichloromethane sulfenyl chlo-

rides by reaction with an ionized organosulfinate in the presence of water and an immiscible organic solvent. These compounds are pesticidally active and particularly useful as pre-emergent herbicides.

3,798,255

ETHERS OF POLYCHLORINATED BENZONITRILES

Lewis William Watts, Jr., Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed May 3, 1971, Ser. No. 139,868

Int. Cl. C07c *121/52*

U.S. Cl. 260—465 F **1 Claim**

Novel ethers are prepared via the interaction of pentachlorobenzonitrile with alkali metal salts of saturated aliphatic alcohols such as methanol, ethanol, propanol, t-butanol and aromatic alcohols such as phenol or substituted phenols. These new compounds have biological activity and are also useful as chemical intermediates.

3,798,256

HYDROCYANATION OF OLEFINS

Charles Morgan King, William Carl Seidel, and Chadwick Alma Tolman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,352

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R **11 Claims**

A process for hydrocyanating an ethylenically unsaturated organic compound in the presence of a zero valent nickel complex of the formulae $Ni(PXYZ)_3R^2CN$ and $Ni(PXYZ)_2A$, wherein X is OR, Y and Z are R or OR and R is an alkyl or aryl radical, a given PXYZ ligand having a cone angle with an average value between 130° and 170°; "A" is an ethylenically unsaturated organic compound containing 2 to 20 carbon atoms; R^2 is an alkyl, alkenyl, cyano substituted alkyl, or aryl group having 1 to 20 carbon atoms.

A Lewis acid such as $AlCl_3$, $ZnCl_2$ or $(C_6H_5)_3B$ may be used in conjunction with the complex.

3,798,257

PROCESS FOR THE PRODUCTION OF BIS(2-HYDROXYETHYL)TEREPHTHALATE

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 5, 1972, Ser. No. 250,586

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P **6 Claims**

A method of producing bis(2-hydroxyethyl)terephthalate which involves reacting an alkali metal salt of terephthalic acid with ethylene oxide in the presence of carbon dioxide.

3,798,258

SALICYLANILIDES

Arthur A. Patchett, Cranford, Helmut Mrozik, Matawan, and Dale R. Hoff, Basking Ridge, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 634,442, Apr. 28, 1967, which is a continuation-in-part of application Ser. No. 573,474, Aug. 10, 1966, which in turn is a continuation-in-part of application Ser. No. 555,694, June 7, 1966, all now abandoned. This application Mar. 13, 1970, Ser. No. 19,487

Int. Cl. C07c *103/30*

U.S. Cl. 260—479 R **10 Claims**

Salicylanilides having an aromatic ring linked to the aniline moiety by one or more non-metallic atoms. Processes for the preparation of novel salicylanilides. Compositions useful in the treatment of parasitic diseases containing a substituted salicylanilide as an active ingredient.

3,798,259

SYNTHESIS OF γ-KETOESTERS

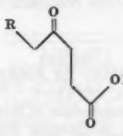
Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 9, 1973, Ser. No. 349,594

Int. Cl. C07c *67/00, 69/66*

U.S. Cl. 260—483 **6 Claims**

Alkanoyl propionates of the formula



wherein R and R′ are each lower alkyl

are prepared from the corresponding alkanoyl succinates by treatment with boric acid. These compounds are useful in the preparation of 2-alkyl-cyclopentan-1,3-diones which are valuable intermediates in the synthesis of natural products, particularly steroids.

3,798,260

PROCESS FOR PRODUCING ACYLOXY-DODECATRIENES

Saburo Hattri, Tokyo, and Naoshi Imaki, Kawasaki, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,649

Claims priority, application Japan, Dec. 30, 1970, 46/125,874; Mar. 29, 1971, 46/18,561

The portion of the term of the patent subsequent to Jan. 29, 1990, has been disclaimed

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **8 Claims**

Acyloxydodecatriene is produced by reacting an octatriene, butadiene, and a carboxylic acid in the presence of a catalytic amount of palladium or a palladium compound, and an amine.

3,798,261

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT SULFONIC ACIDS

Paul C. Kemp, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Aug. 26, 1968, Ser. No. 755,446

Int. Cl. C07c *143/00*

U.S. Cl. 260—504 R **15 Claims**

This disclosure concerns a process for preparing high-purity, high molecular weight sulfonic acids from a petroleum fraction (e.g., bright stock). Briefly, the process comprises the steps of: (1) sulfonating the petroleum fraction, (2) adding to the sulfonation mass, water and a volatile hydrocarbon solvent (e.g., hexane), (3) allowing the admixture to settle, (4) withdrawing the aqueous layer, and (5) thereupon obtaining a solution of the sulfonic acids.

A salient feature of the process is the use of *both* water and the volatile hydrocarbon solvent.

If desired, in order to reduce settling time, a low molecular weight sulfonic acid can be added to the admixture of sulfonation mass, water and volatile hydrocarbon solvent. The low molecular weight sulfonic acid can be formed in situ by including a suitable sulfonatable hydrocarbon in the petroleum fraction subjected to sulfonation.

3,798,262

SULFONYLBENZENESULFONIC ACIDS

Carl Ziegler, Glenside, and James M. Sprague, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,617
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 R 1 Claim

Sulfonylbenzenesulfonic acids and salts and esters thereof wherein the benzene ring may be substituted by halo, alkyl, trihalomethyl, nitro, carboxy or a hydrocarbylene moiety. The products are prepared by treating a sulfonylbenzenesulfonyl halide with water and are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,798,263

PROCESS FOR MAKING DL-S-BENZYL-N-ACETYL CYSTEINE

Paul Rambacher, Stettinerstrasse 4, Rosenheim, Germany, and Siegfried Make, Kufsteiner Strasse 85, Kirchdorf am Inn, Germany

No Drawing. Filed June 10, 1969, Ser. No. 831,987
Claims priority, application Germany, June 11, 1968, P 17 68 647.4; July 29, 1968, P 17 93 094.8
Int. Cl. C07c *149/42*
U.S. Cl. 260—516 1 Claim

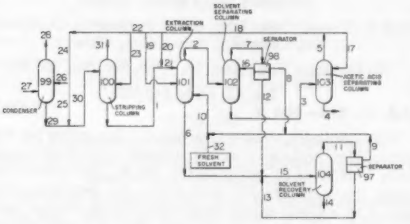
The application discloses a proces for making racemic cysteine, inactive cystine and DL - S - benzyl-N-acetyl cysteine by reacting serine and acetic anhydride in the presence of a thioacid, such as thioacetic acid, or in the presence of thiourea, whereby the thio-compound is attached to the azlactone of acetamino acrylic acid in statu nascendi. The attachment product is then hydrolyzed by an alkaline or acid hydrolyzing agent, or by both successively, thereby forming racemic cysteine. This product may be used as such, or it may be oxidized to form inactive cystine, or it may be benzylated and acetylated to form DL-S-benzyl-N-acetyl-cysteine.

3,798,264

PROCESS FOR PURIFICATION OF ACRYLIC ACID BY EXTRACTION AND DISTILLATION

Kunihiro Kubota and Noboru Shimizu, Osaka, and Takashi Ohara, Nishinomiya, Japan, assignors to Nippon Shokubai Kogaku Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 23, 1971, Ser. No. 211,239
Claims priority, application Japan, Dec. 26, 1970, 45/118,788
Int. Cl. C07c *57/04*
U.S. Cl. 260—526 N 1 Claim



A process for the purification of acrylic acid comprising extracting an acrylic acid aqueous solution formed by the gas phase catalytic oxidation of propylene or acrolein, with an extracting solvent in an extraction zone, separating the extracting solvent from the extract in a distillation zone, and thereafter distilling off a mixture of acrylic acid and acetic acid from the remaining portion of the extract in a rectification zone, thereby to obtain acrylic acid substantially free of of acetic acid, said process being characterized in that the distillate from the rectification zone containing acrylic acid and acetic acid is recycled to the extraction zone.

3,798,265

POLYFLUOROALKOXY ALKYL AMIDOCARBOXYLIC ACIDS AND SALTS THEREOF

Philip Lee Bartlett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,597
Int. Cl. C07c *103/50*
U.S. Cl. 260—534 M 8 Claims

Surfactant and emulsifying compounds derived from hexafluoropropylene oxide polymer acid halides and aminoacids having the formula:

$$R_fO[CF(CF_3)CF_2O]_nCF(CF_3)CON(R^1)-R^2X$$

wherein R_f is a perfluoroalkyl radical having from 1 to 6 carbon atoms, n is an integer from 0 to about 8, R^1 is hydrogen or an alkyl radical having from 1 to about 12 carbon atoms, R^2 is an alkylene radical having from 1 to about 12 carbon atoms, arylene or a substituted alkylene radical having the formula

$$-CH(-(CH_2)_b-R^3)-(CH_2)_a-$$

wherein the sum of a and b is from 1 to about 12, and R^3 is OH, SCH_3 or CO_2H, R^1 and R^2 together may be an alkylene radical having 4 or 5 carbon atoms and X is CO_2M or SO_3M wherein M is hydrogen, alkali metal, ammonium or substituted ammonium.

3,798,266

PROCESS FOR PREPARING CITRIC ACID

Giorgio Bottaccio and Gian Paolo Chiusoli, Novara, Alfredo Coassolo, Vogogna, and Vittorio Carletti, Meda, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Sept. 18, 1972, Ser. No. 290,160
Claims priority, application Italy, Sept. 20, 1971, 28,832/71
Int. Cl. C07c *59/16*
U.S. Cl. 260—535 P 16 Claims

A process for preparing citric acid, comprising carboxylating acetone with carbon dioxide in an inert dipolar aprotic medium, selected from the group consisting of N-dialkyl-substituted amides of organic acids, N-alkyl-lactams having up to 10 carbon atoms, and dimethyl sulphoxide, in the presence of at least 4 moles of phenol alkaline salts per each mole of acetone, at a temperature between 0° and 60° C. and at a substantially atmospheric pressure, to yield a 3-ketoglutaric acid alkaline salt. Cyanurating said 3-ketoglutaric acid alkaline salt with HCN in excess with respect to the theoretical amount necessary to obtain the cyanohydrin of the 3-ketoglutaric acid, at a temperature ranging from 0° to 10° C. Subsequently hydrolyzing the cyanohydrin thus obtained with sulphuric acid in excess with respect to the present alkali and nitrogen to yield citric acid. Recovering the citric acid as an alkaline earth metal salt.

3,798,267

PROCESS OF PRODUCING ACETIC ACID FROM METHYL FORMATE

Hachiro Wakamatsu, Tokyo, Jiro Sato, Yokohama, and Tatsunori Hamaoka, Hayama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 114,065, Feb. 9, 1971. This application Aug. 10, 1972, Ser. No. 279,719
Claims priority, application Japan, Feb. 25, 1970, 45/16,018; Aug. 19, 1971, 46/63,253
Int. Cl. C07c *51/00*
U.S. Cl. 260—541 7 Claims

Methyl formate is isomerized to acetic acid in the presence of activated carbon and a halogen promoter at 200° to 450° C.

3,798,268

1-BENZYL-3-[2-PHENOXY-5-(N-ETHYL-N-PHENYLSULFAMOYL)PHENYL] - 2 - THIOUREAS AND CONGENERS

Robert C. Tweit, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,024
Int. Cl. C07c *157/06*
U.S. Cl. 260—552 R 14 Claims

Preparation of 1 - benzyl-3-[2-phenoxy-5-(N-ethyl-N-phenylsulfamoyl)phenyl]-2-thioureas and congeners such as 1 - (2,5 - dimethylbenzyl) - 3-[2-phenoxy-5-(N-ethyl-N-phenylsulfamoyl)phenyl]-2-thiourea, and valuable biological properties thereof including anti-ulcerogenic activity, are disclosed.

3,798,269

AMIDINOUREAS AND AMIDINOTHIOUREAS

Royal A. Cutler, Box 442, Sand Lake, N.Y. 12196, and Samuel Schalit, 56 Forest Ave., Albany, N.Y. 12208

No Drawing. Application Aug. 5, 1968, Ser. No. 749,986, now Patent No. 3,652,766, dated Mar. 28, 1972, which is a continuation-in-part of application Ser. No. 556,897, June 13, 1966, which in turn is a continuation-in-part of application Ser. No. 462,077, June 7, 1965, both now abandoned. Divided and this application Oct. 8, 1970, Ser. No. 79,266
Int. Cl. C07c *127/16*
U.S. Cl. 260—553 R 6 Claims

Antibacterial and antifungal mono- and disubstituted amidinoureas and amidinothioureas are obtained by interaction of guanidines and isocyanates or isothiocyanates.

3,798,270

ALPHA-IMINO AMINES

Richard J. Lee, Downers Grove, Ill., and Clarence M. Loane, Highland, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,712
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R 4 Claims

Reaction of an alpha-nitro alkyl amine containing nitro and amino groups on adjacent carbon atoms with an aliphatic primary amine or an aliphatic polyamine and sulfur dioxide reduces the nitro group and forms the corresponding aliphatic alpha-imino amine containing imino and amino groups on adjacent carbon atoms. Such aliphatic alpha-imino amines are useful per se as antioxidants, surfactants, detergents, anti-rust agents, and flotation agents in aqueous and hydrocarbon systems, or as chemical intermediates, for example, for preparation of dyes.

3,798,271

PROCESS FOR THE MANUFACTURE OF 1-AMINO-2,5-DIALKOXY-4-CHLOROBENZENES

Gerhard Podschus, Glashutten, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 31, 1970, Ser. No. 60,089
Claims priority, application Germany, Aug. 14, 1969, P 19 41 377.5; July 11, 1970, P 20 34 590.8
Int. Cl. C07c *91/44*
U.S. Cl. 260—575 9 Claims

1 - amino-2,5-di-lower alkoxy-4-chlorobenzenes are obtained in excellent space-time-yields and in high purity when in the reduction process with iron and lower alkane carboxylic acids the 1-nitro-2,5-di-lower alkoxy-4-chlorobenzene is introduced as solution in an organic solvent. The products are valuable diazo compounds for the manufacture of azo dyestuffs.

3,798,272

PHENANTHRENE DERIVATIVES

Wataru Nagata, Nishinomiya, Tadao Terasawa, Takatsuki, and Tsutomu Aoki, Amagasaki, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Original application Dec. 6, 1968, Ser. No. 781,964, now Patent No. 3,661,999. Divided and this application Apr. 22, 1971, Ser. No. 136,597
Claims priority, application Japan, Dec. 26, 1967, 42/85,159, 42/85,160; Feb. 13, 1968, 43/9,012
Int. Cl. C07c *49/54*
U.S. Cl. 260—586 H 10 Claims

Phenanthrene derivatives useful as medicaments for anti-androgenic therapy and acne-prophylactic or treatment thereof.

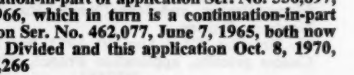
3,798,273

INTERMEDIATE FOR SYNTHESIS OF HOUSEFLY SEX ATTRACTANT

Robert L. Cargill, Columbia, S.C., assignor to Research Corporation, New York, N.Y.

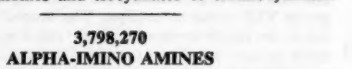
No Drawing. Filed Nov. 29, 1972, Ser. No. 310,556
Int. Cl. C07c *49/20*
U.S. Cl. 260—593 R 3 Claims

The invention relates to compounds of the formula



(Cis)

wherein x is an integer from 7 to 11, inclusive, and y is an integer from 0 to 4, inclusive, said ketone containing 23 carbon atoms which are useful in the synthesis of the housefly sex attractant of the formula



(Cis)

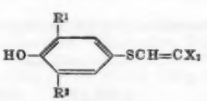
3,798,274

INSECTICIDAL PHENOLS

Joseph E. Moore, Richmond, and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 24, 1972, Ser. No. 300,082
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F 4 Claims

2,6-di-(branched alkyl)-4-(halovinylthio) phenol compounds of the formula



wherein R^1 and R^2 are branched alkyl groups of 3 to 6 carbon atoms and X is hydrogen, fluorine, chlorine, bromine or iodine, with the proviso that at least one X is halogen, have morphogenetic hormonal mimetic activity on mosquitos. The compounds are prepared by the reaction of a 2,6-di-(branched alkyl) phenol and a halovinylsulfenyl halide.

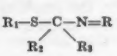
3,798,275

ETHERIFIED MERCAPTO-METHOXYAMINES

Neville Finch, West Orange, and Isidoros Vlattas, Millburn, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,423
Int. Cl. C07c *131/02*
U.S. Cl. 260—609 R 3 Claims

Prostaglandinoximes, e.g. those of the formula



R=9-desoxo-prostaglandin moiety
R_1=aliphatic, araliphatic or aromatic radical
$R_{2,3}$=H or R_1, or R_2+R_3=alkylene

are valuable intermediates in the preparation of PGE_1 or analogs thereof.

3,798,276

HERBICIDAL 4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS

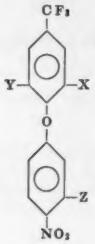
Horst O. Bayer, 186 Red Rose Drive, Levittown, Pa. 19056; Colin Swithenbank, 1710 W. Rock Road, Perkasie, Pa. 18944; and Roy Y. Yih, 73 Townview Drive, Doylestown, Pa. 18901

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,651

Int. Cl. C07c *43/28*

U.S. Cl. 260—612 R **6 Claims**

Compounds of the formula



wherein

X is a hydrogen atom, a halogen atom, a trihalomethyl group, an alkyl group, or a cyano group,

Y is a hydrogen atom, a halogen atom, or a trihalomethyl group, and

Z is an alkoxy group, an alkoxyalkoxy group, a hydroxyalkoxy group, an alkyl group, a halogen atom, an alkylamino group, a dialkylamino group, an alkylthio group, a carboxy group, a carbalkoxy group, a carboxyalkyl group, a carbalkoxyalkoxy group, a carboxyalkyl group, a carbalkoxyalkyl group, a dialkylureido group, an alkanoylamino group, or a carbalkoxyamino group,

and compositions containing these compounds exhibit herbicidal activity.

3,798,277

PROCESS FOR THE PREPARATION OF HYDROQUINONE

Masatoshi Sugiyama, Yasuo Nishigaki, and Sadayoshi Itagaki, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 18, 1971, Ser. No. 154,334

Claims priority, application Japan, June 18, 1970, 45/52,986

Int. Cl. C07c *37/08*

U.S. Cl. 260—621 C **13 Claims**

A process for obtaining hydroquinone is disclosed wherein the decomposition reaction products of para-diisopropyl benzene di-hydroperoxide in the presence of an acid is neutralized with an alkali, the precipitated alkali salt of the acid is filtered off, the acetone is distilled off, the residue is extracted with an aliphatic halogenated hydrocarbon, and finally, the resulting hydroquinone is separated from the residual aqueous solution left on the extraction.

3,798,278

PROCESS OF PRODUCING ALCOHOLS

Herbert August Jung, New York, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,360

Claims priority, application Great Britain, Aug. 17, 1970, 39,498/70

Int. Cl. C07c *33/02, 69/80*

U.S. Cl. 260—638 R **10 Claims**

A process for the preparation of unsaturated higher alcohols from conjugated dienes and aldehydes by contacting said dienes and aldehydes in the presence of a salt or chelate or coordination compound of palladium or platinum and a ligand of the type YR_3 wherein Y is phosphorus or arsenic and R is a hydrocarbyl radical characterized as being more bulky in proximity to Y than a straight chain alkyl radical or an unsubstituted aromatic ring.

3,798,279

PROCESS FOR HYDROGENATING AROMATIC HYDROCARBONS TO NAPHTHENIC HYDROCARBONS OF HIGH PURITY AND CATALYST THEREFOR

Maurice Cessou, Chez M. Alberto, Rue la Vesina 69, Irigny, France, and Jean Cosyns, Rue de Sannois 92, Nanterre, France

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,320

Claims priority, application France, Sept. 8, 1970, 7032661

Int. Cl. C07c *5/14*

U.S. Cl. 260—667 **9 Claims**

Aromatic hydrocarbons are hydrogenated to the corresponding naphthenic hydrocarbons in a two-step process. The first step is carried out in the liquid phase with a group VIII metal as catalyst. The second step is carried out in the liquid or gaseous phase with a group VIII metal oxide as catalyst. For example, benzene is hydrogenated to cyclohexane with Raney nickel and supported nickel as respective catalysts.

3,798,280

PROCESS FOR PREPARATION OF 2,6-DIMETHYL NAPHTHALENE

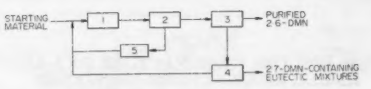
Keizo Shimada, Takeo Nishikawa, Toshiaki Harada, Seizi Kurozumi, Yoshinobu Takeuchi, and Shizuo Nagahama, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 24, 1972, Ser. No. 219,994

Claims priority, application Japan, Jan. 27, 1971, 46/2,734

Int. Cl. C07c *15/24*

U.S. Cl. 260—668 F **5 Claims**



In the preparation of 2,6-dimethyl naphthalene by feeding 1,5-dimethyl naphthalene, 1,6-dimethyl naphthalene, a mixture thereof, or a mixture containing such dimethyl naphthalene as the main component to the zone of an isomerization reaction, isomerizing the dimethyl naphthalene in the presence of an isomerization catalyst, cooling the resulting isomerization reaction product to crystallize 2,6-dimethyl naphethalene, and separating and recovering the same, the improvement wherein 2,7-dimethyl naphthalene or its eutectic mixture is removed before the mother liquor remaining after the recovery of 2,6-dimethyl naphthalene from the isomerization reaction product is recycled to the isomerization reaction zone.

3,798,281

PROCESS FOR PRODUCTION OF POLYARYLENES

Chen-Shen Wang, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of abandoned application Ser. No. 169,429, Aug. 5, 1971. This application July 31, 1972, Ser. No. 274,587

Int. Cl. C07c *15/12*

U.S. Cl. 260—670 19 Claims

An improved rapid process for obtaining polyarylenes, i.e., polymers of aromatic compounds, by contacting aromatic compounds with an Al_2O_3-SiO_2 catalyst system.

3,798,282

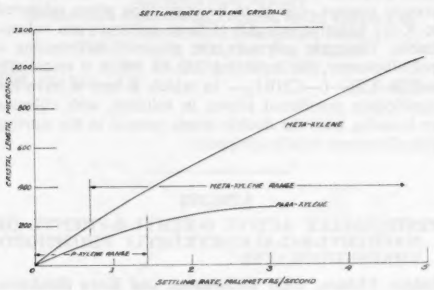
SELECTIVE SEPARATION OF XYLENES BY CRYSTAL SIZE CLASSIFICATION

Alan G. Bemis, John K. Darin, and Melvern C. Hoff, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 11, 1972, Ser. No. 279,853

Int. Cl. C07c *7/14*

U.S. Cl. 260—674 A 32 Claims



A process is provided for recovering high purity meta-xylene from mixtures of primarily C_8 aromatic isomers (1) by cooling such a mixture to form a slurry of liquor and discrete meta- and para-xylene crystals of different size and shape, (2) by classifying crystals of the two species on the basis of their different size and shape and/or settling rates to obtain a crystal stream enriched in meta-xylene, and (3) by concentrating the meta-xylene rich crystal solids. Partial melting or complete melting and recrystallizing can be used for further purification to obtain very high purity meta-xylene.

3,798,283

NON-CATALYTIC OXIDATIVE DEHYDROGENATION PROCESS

Lou S. Bitar, Rikswijk, Netherlands, David S. Smallwood, Philadelphia, Pa., and Elliot N. Lang, Guadalajara, Jalisco, Mexico, assignors to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 56,722, July 20, 1970. This application Mar. 8, 1972, Ser. No. 232,928

Int. Cl. C07c *3/28*

U.S. Cl. 260—683.3 9 Claims

Conversion of propane to propylene by oxidative dehydrogenation with a high selectivity to propylene at a given propane conversion level is carried out by the reaction of propane and sufficient molecular oxygen at temperatures of about 890° F. to 940° F. to maintain an excess partial pressure of oxygen in the reaction zone either by the use of total pressures above atmospheric pressure or by the use of an oxygen-rich feed or by a combination of both, the excess partial pressure of oxygen in the reaction zone being characterized by a specific oxygen partial pressure range in the effluent gas stream.

3,798,284

PROCESS FOR THE PREPARATION OF SYNTHETIC LUBRICATING OILS FROM OLEFINES

Renato Tesei, Pierleone Girotti, and Telemaco Floris, San Donato, Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato, Milanese, Italy

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,974

Claims priority, application Italy, Dec. 30, 1969, 26,427/69

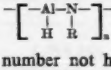
Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 20 Claims

Lubricating oils having improved characteristics may be synthesized by polymerizing certain linear alpha olefines in the presence of an inorganic catalyst system comprising:

(a) a compound of a transition metal from the IV to the VIII group of the Periodic System, and

(b) a compound of aluminum which is a linear polymer of polyiminic nature having the formula:



wherein n is a number not higher than 50 and R is a hydrocarbon radical.

3,798,285

OLEFIN OLIGOMERIZATION PROCESS

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 824,268, May 13, 1969. This application Nov. 26, 1971, Ser. No. 202,653

Int. Cl. C07c *3/20*

U.S. Cl. 260—683.15 D 12 Claims

A catalyst composition for the oligomerization, including dimerization, of olefins is provided by combining (A) manganese, (B) a monophosphine electron donor ligand, and (C) a Lewis acid-reducing agent, in molar ratios of (B) to (A) of about 1 to 10:1 and (C) to (A) of about 5 to 25:1. Preferred catalyst components are manganic acetylacetonate, triphenylphosphine and ethylaluminum sesquichloride.

3,798,286

STABILIZED POLYOLEFINS USEFUL AS WIRE INSULATION IN PETROLEUM-JELLY FILLED CABLES

Donald E. Reid, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed May 18, 1972, Ser. No. 254,553

Int. Cl. C08f *29/10, 45/58;* C08g *37/20*

U.S. Cl. 260—848 4 Claims

Polyolefins useful for insulating wire for use in petroleum jelly-filled cables are stabilized by a combination of additives including a phenolic antioxidant, a polymeric ester of a thiodialkanoic acid and an inhibitor against copper induced degradation.

3,798,287

METHOD FOR PRODUCING A MIXED POLYMER OF VINYLIDENE FLUORIDE POLYMERS

Naohiro Murayama, Toshio Hosokawa, and Morio Shirai, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed July 25, 1972, Ser. No. 274,983

Claims priority, application Japan, July 26, 1971, 46/55,873

Int. Cl. C08d *9/08;* C08f *29/22*

U.S. Cl. 260—878 R 5 Claims

A method of producing a mixed polymer of vinylidene fluoride having excellent crystallization characteristic, wherein a monomer which is polymerizable by itself without reacting with the resulting polyvinylidene fluoride is

added to and polymerized by itself within or on the surface of the vinylidene fluoride polymer particles.

3,798,288

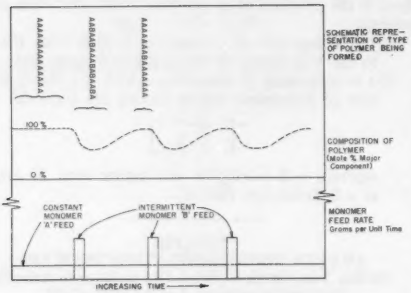
ETHYLENE/PROPYLENE BLOCK COPOLYMERS

Robert J. McManimie and William R. Richard, Jr., Dayton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed June 11, 1959, Ser. No. 819,649

Int. Cl. C08f *1/42, 15/04*

U.S. Cl. 260—878 B **9 Claims**


SCHEMATIC REPRESENTATION OF TYPE OF POLYMER BEING FORMED
100 %
0 %
COMPOSITION OF POLYMER (Mole % Major Component)
CONSTANT MONOMER 'A' FEED
INTERMITTENT MONOMER 'B' FEED
MONOMER FEED RATE Grams per Unit Time
INCREASING TIME

A method of preparing block copolymers from ethylene and propylene monomers which comprises alternately polymerizing one of said monomers and a mixture of said monomers in the presence of a catalyst comprising a vanadium halide and an aluminum alkyl compound.

3,798,289

VINYL HALIDE POLYMER-OLEFIN COPOLYMER ALLOYS

James Edward McGrath, Somerville, and Markus Matzner, Edison, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,851

Int. Cl. C08f *33/08, 37/18*

U.S. Cl. 260—895 **12 Claims**

Compatible alloys or blends of at least one vinyl halide polymer and at least one copolymer of an olefin and a nitrogen-containing comonomer having a basic characteristic are produced; e.g. an alloy of poly(vinyl chloride) and a copolymer of ethylene and N-methyl-N-vinylacetamide or N,N-dimethylacrylamide.

3,798,290

MIXED POLYALKYLENE GLYCOL POLYPHOSPHORUS COMPOUND

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 86,313, Nov. 2, 1970, which is a continuation-in-part of application Ser. No. 63,262, Aug. 6, 1970, now abandoned. This application July 26, 1971, Ser. No. 166,289

Int. Cl. C07f *9/08;* **C08g** *22/44*

U.S. Cl. 260—929 **5 Claims**

Mixed polyalkylene glycol polyphosphorus compounds containing both phosphite and vinyl phosphate linkages are prepared by reacting certain polyalkylene glycol polyphosphites with less than a stoichiometric amount of a halogenated carbonyl compound.

3,798,291

HALOGENATED POLYHYDROCARBONS HAVING A REGULAR STRUCTURE, AND PROCESS FOR OBTAINING SAME

Gino Dall'Asta, Milan, and Pietro Meneghini, Pioltello, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation of abandoned application Ser. No. 870,424, Oct. 21, 1969. This application Jan. 17, 1972, Ser. No. 218,556

Claims priority, application Italy, Oct. 21, 1968, 22,766/68

Int. Cl. C08f *5/00*

U.S. Cl. 260—931 **6 Claims**

Linear, high molecular weight poly(dihalogenalkenamers) are disclosed. The polymers show the repeating unit

$$—CHX—CHX(—CHR)_n—$$

in which X is chlorine or bromine, R is hydrogen, methyl or phenyl, and *n* is a whole number from 3 to 10. Some of the polymers are amorphous. Other of the polymers, those prepared from stereoregular polyalkenamers by the present process, appear to be crystalline when subjected to X-ray examination. All of these polymers are vulcanizable. The new polymers are prepared by reacting a polyalkenamer, the repeating unit of which is essentially $—CH=CH—(—CHR)_n—$ in which R and *n* have the significance mentioned above, in solution, with chlorine or bromine until the double bonds present in the starting polyalkenamer totally disappear.

3,798,292

PESTICIDALLY ACTIVE O-ETHYL-O-PHENYL OR NAPHTHYL-S-(2-ALKOXYETHYL) PHOSPHOROTHIONOTHIOLATES

Shigeo Kishino, Akio Kudamatsu, and Kozo Shiokawa, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

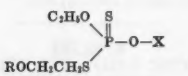
No Drawing. Filed Apr. 22, 1971, Ser. No. 136,584

Claims priority, application Japan, Apr. 30, 1970, 45/36,305

Int. Cl. A01n *9/36;* **C07f** *9/18*

U.S. Cl. 260—950 **11 Claims**

O-ethyl-S-(2-alkoxyethyl)-dithiophosphoric acid phenyl or naphthyl esters, i.e. O-ethyl-S-(2-alkoxyethyl)-O-optionally substituted phenyl or naphthyl-phosphorothionothiolates, of the formula

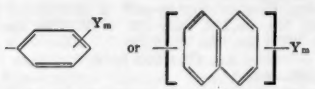


(I)

in which

R is a lower alkyl radical, and

X is a group of the formula



(IIa) (IIb)

in which

Y is a halogen atom or a lower alkyl, lower alkoxy, lower alkylmercapto, lower alkylsulfinyl, nitro, cyano or phenyl group, and

m is 0, 1, 2 or 3,

which possess insecticidal, acaricidal and nematocidal properties.

3,798,293

O-ALKYL-S-SUBSTITUTED-O-NAPHTHYL-PHOSPHOROTHIOLATES

Shigeo Kishino and Yasuo Yamada, Tokyo, Akio Kudamatsu, Kanagawa-ken, Yoshio Kurahashi, Shoozo Sumi, and Morisuke Seki, Tokyo, and Koozo Shiokawa, Kanagawa-ken, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,762
Claims priority, application Japan, Oct. 21, 1969, 44/83,602
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—964 8 Claims

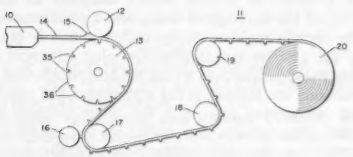
O - alkyl - S - substituted-O-naphthylphosphorothiolates, i.e. O-lower alkyl-S-lower alkyl, lower alkenyl or lower alkoxyethyl-O-naphthylphosphorothiolates which may contain up to three halogen atoms on the naphthyl ring, which possess insecticidal and fungicidal properties, as well as compositions containing such phosphorothiolates and methods of combating insects and fungi using such phosphorothiolates.

3,798,294

METHOD FOR PRODUCING BATTERY SEPARATOR SHEET

Bonderinko Hollenbeck, Pelham, N.H., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 10, 1972, Ser. No. 225,205
Int. Cl. B29d 7/06, 27/00
U.S. Cl. 264—41 5 Claims



A plastic material is formed into a sheet suitable for conversion into a battery separator. An extruded sheet is formed by calendering to produce projections on at least one surface and thereafter its thickness is made more uniform. The method preferably includes transporting the calendered sheet on the calendering roll to partially harden it. The sheet is removed from the calendering roll by withdrawing the projections substantially straight out of the depressions in the calendering roll. The plastic material is preferably oil filled.

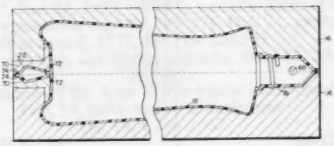
3,798,295

PROCESS FOR BLOW MOLDING CONTAINERS UTILIZING DOUBLE PINCH

Richard MacDuff, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 102,692, Dec. 30, 1970. This application Nov. 6, 1972, Ser. No. 304,285
Int. Cl. B29c 17/07
U.S. Cl. 264—99 3 Claims

Containers are made from a continuous oriented crystalline mono-α-olefin tubing. Orientation of the tubing is effected by heating the crystalline tubing in an oven to a few degrees below its crystalline melting point and then stretching or orienting the tubing in an axial direction. A first mold is closed about a length of tubing and internal pressure is applied to expand the tubing within the mold to form a container. The mold is then moved away from the oven at a rate which is faster than the rate that the tubing is emerging from the oven thereby stretching or orienting a length of the tubing. A second mold then closes on the newly oriented length of tubing and proceeds in the same manner as the first mold which opens and discharges its container after the second mold closes. A



double pinch is utilized at the rear of the mold to prevent "blow-back" of air pressure past the first pinch into the tubing in the oven and is also utilized to prevent pulling material away from the first pinch area due to the magnitude of force required to orient the tubing.

3,798,296

SPINNING SELF-CRIMPING COMPOSITE FIBERS

James Kellett Thomas, Pensacola, Fla., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 28, 1972, Ser. No. 276,192
Int. Cl. B29f 3/10
U.S. Cl. 264—171 6 Claims

Self-crimping composite fibers of acrylonitrile polymer components, all of the same acrylonitrile polymer but some of which contain finely dispersed silica particles to reduce shrinkage thereof and the rest of which contain water-insoluble plasticizer, e.g., organic phosphate or phosphite to increase shrinkage thereof on exposure to heat so crimp is developable at elevated temperature. Such fibers are made by preparing a plurality of polymer solutions of the same polymer and the same polymer concentration, dispersing finely divided silica particles in some but not all these polymer solutions, dispersing a water-insoluble liquid plasticizer in the rest of the polymer solutions, and spinning such spinning solutions to form composite fibers by a process which includes the steps of stretching the fibers and subsequently relaxing the fibers at elevated temperature in a free-to-shrink condition to develop crimpiness therein.

3,798,297

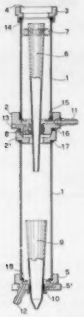
METHOD FOR SPINNING FILAMENTS WHICH HAVE BEEN REGENERATED FROM A SOLUTION OF CUPRAMMONIUM CELLULOSE AND FILAMENTS PRODUCED THEREBY

Oreste Gallina, Stresa, Italy, assignor to Bemberg S.p.A., Milan, Italy

Filed Sept. 10, 1971, Ser. No. 179,415
Claims priority, application Italy, Sept. 22, 1970, 30,065/70
Int. Cl. D01d 5/14
U.S. Cl. 264—181 12 Claims

A method for spinning cuprammonium yarns is disclosed in which the filaments, as they emerge from the spinneret are contacted by a downward flow of a coagulation liquor (e.g. water) whose tension is adjusted to be virtually zero, then the filaments pass through a second area in which the filaments acquire a substantial tension due to their free falling while their diameter is substantially reduced, whereafter the filaments are passed through a third area where they are contacted by another

discrete stream of coagulation liquor to complete the coagulation. Thus the tension is raised to the expected



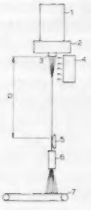
final drawing value and the filaments can now be regenerated in an acidic bath (e.g. diluted H_2SO_4).

3,798,298

PROCESS FOR PREPARING A FIBRE FLEECE

Pieter C. A. van Krimpen, Stein, and Victor M. B. Wetzler, Munstergeleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Feb. 1, 1972, Ser. No. 222,592
Claims priority, application Netherlands, Feb. 6, 1971, 7101603
Int. Cl. D01f *3/10*
U.S. Cl. 264—210 F **4 Claims**



A process and an apparatus for preparing a fibre fleece, in which a polymer material is spun into filaments which are subsequently so cooled that the major portion of the polymer material is in crystallized form, whereupon the filaments are heated to a temperature close to the melting point, led over a contact area, pneumatically stretched and spread on a conveying surface.

3,798,299

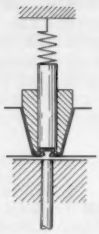
PROCESS FOR THE MANUFACTURE OF A STRUCTURE OF POSITIVELY CONNECTED CORRUGATED AND FLAT SHEETS OF THERMOPLASTIC MATERIAL

Peter Gumm, Frankfurt am Main, Karl-Heinz Krubig, Hattersheim, Jorg Lohmann, Dortmund, and Josef Zimmermann, Niederhofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Apr. 19, 1972, Ser. No. 245,347
Claims priority, application Germany, Apr. 21, 1971, P 21 19 321.5
Int. Cl. B29c *17/02*
U.S. Cl. 264—249 **5 Claims**

A process for manufacturing a structure is described which consists of a corrugated and a flat sheet or film of thermoplastic material, which sheets are positively connected by matching depressions with undercuts arranged along the grooves of the corrugated sheet and at corresponding points of the flat sheets. The structure is especially suited to make inserts for trickling-filter towers.

Matching depressions are produced simultaneously in the flat and the corrugated sheet in their areas of contact, and the depressions are then compressed whereby an undercut positive connection is formed.



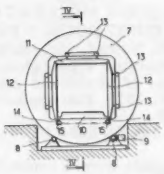
The device may be operated continuously or intermittently, its main part consisting of the tool for making the positive connections. Said tool comprises as the essential parts a series of female molds designed to fit in the grooves of the corrugated sheet, and a counteracting plug. In the female mold a spring-loaded punch is guided. To form the positive connections the plug advances into the female mold against the spring-loaded punch, and thereby depressions are formed in the corrugated and the flat sheet which are guided one upon the other through the tool. As the plug retracts, the spring-loaded punch advances to compress the depressions whereby the undercut is formed and the sheets are firmly connected.

3,798,300

METHOD FOR PRODUCING CAST THREE DIMENSIONAL BUILDING COMPONENTS

Albert C. Verbeke, Lille, France, assignor to BATIR

Filed Apr. 21, 1971, Ser. No. 136,140
Claims priority, application France, Sept. 17, 1970, 7033663
Int. Cl. B28b *1/20*
U.S. Cl. 264—250 **5 Claims**



A method of producing cast three-dimensional building components having four substantially flat walls defining a tubelike portion of said component, the component having the four adjacent walls thereof successively flat cast on the four walls of a rotating mold. Prior to casting, longitudinally extending corner members are

fixedly but detachably positioned adjacent the four corners formed by the four walls of the rotating mold. The corners are positioned at a distance from the walls of the mold equal to the thickness of the walls of the component. After each wall of the component has been cast, a rigid panel is positioned against the exposed inner surface of the cast wall and is held in position by means of braces which extend between the corresponding corner members, thereby enabling rotation of the mold to permit sequential casting of the four walls.

3,798,301

PROCESS FOR IMPROVING THE SHAPE OF A STICK OF LONGITUDINALLY SHIRRED ARTIFICIAL SAUSAGE CASING

Felix Rassbach and Rolf Buttner, Wiesbaden, and Stephan Schuck, Wiesbaden-Frauenstein, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 28, 1971, Ser. No. 213,031
Claims priority, application Germany, Dec. 29, 1970, P 20 64 192.3
Int. Cl. B29c *15/00*
U.S. Cl. 264—294 **2 Claims**

A stick of artificial sausage casing of regenerated cellulose or thermoplastic material which has been longitudinally shirred and reinforced by compression is passed through a narrow, round, resiliently expandable passage. The passage is maintained at an elevated temperature and the stick is maintained at a constant length during travel through the passage causing the entire round outer surface of the stick to be smoothed.

3,798,302

PROCESS FOR IMPROVING THE SHAPE OF A STICK OF LONGITUDINALLY SHIRRED ARTIFICIAL SAUSAGE CASING

Armin Kostner, Wiesbaden, and Richard Lenhart, Wiesbaden-Frauenstein, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 28, 1971, Ser. No. 213,030
Claims priority, application Germany, Dec. 29, 1970, P 20 64 147.8
Int. Cl. B29c *15/00*
U.S. Cl. 264—310 **2 Claims**

Process for improving the shape of a stick of longitudinally shirred artificial sausage casing of regenerated cellulose or thermoplastic material which comprises smoothing the entire round outer surface of the stick while maintaining the length thereof constant. Smoothing is performed by passing the stick through a closely calibrated round zone while heating the stick and without twisting it or by contacting the stick with heated rollers.

3,798,303

METHOD FOR THE PRODUCTION OF URANIUM MONOCARBIDE

Yumi Akimoto, Omiya, and Koji Tanaka, Urawa, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed May 18, 1970, Ser. No. 38,604
Claims priority, application Japan, May 27, 1969, 44/40,579
Int. Cl. C01g *43/00*
U.S. Cl. 423—5 **3 Claims**

An improved method for the production of uranium monocarbide adapted to manufacture a nuclear fuel and having a composition of high density, a carbon content of which is approximately equivalent to the stoichiometric composition, in which uranium carbide as a raw material is subjected to fusing treatment by an inert plasma flame consisting of argon and hydrogen, thereby to carry out fusing of the carbide and control of carbon content of said carbide in one step.

3,798,304

HYDRO-METALLURGICAL TREATMENT OF NICKEL COBALT AND COPPER CONTAINING MATERIALS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada

No Drawing. Continuation-in-part of application Ser. No. 221,437, Jan. 27, 1972, which is a continuation of abandoned application Ser. No. 869,376, Oct. 24, 1969. This application June 8, 1972, Ser. No. 260,991
Claims priority, application Canada, Dec. 13, 1968, 37,790
The portion of the term of the patent subsequent to Feb. 19, 1991, has been disclaimed
Int. Cl. C22b *3/00*
U.S. Cl. 423—36 **26 Claims**

A process for the recovery by leaching of nickel cobalt and copper using sulphuric acid and employing agents capable of introducing alkali metal ion or ammonium ion to the pulp whereby the dissolution of desired metals is controlled and the iron content of the solution is reduced to a desired level. The leaching may be carried out at temperatures and pressures below or above atmospheric pressure and the atmospheric boiling point of the pulp.

3,798,305

RECOVERING RHENIUM VALUES FROM ORGANIC EXTRACTANT SOLUTIONS

L. Rita Pagnozzi, James C. Patton, Jr., and Martin B. MacInnis, Towanda, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed May 19, 1972, Ser. No. 255,234
Int. Cl. C01g *47/00, 39/00*
U.S. Cl. 423—49 **3 Claims**

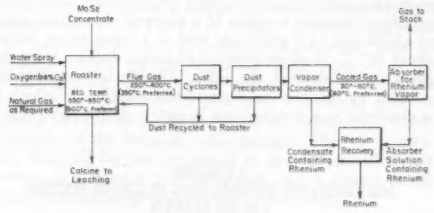
A process is disclosed wherein essentially all of the rhenium can be recovered from organic extractant solutions which selectively extract rhenium from aqueous solutions containing molybdenum A stripping solution of nitric acid removes the rhenium and can be recycled to obtain a high concentration of rhenium in the stripping solution.

3,798,306

RECOVERY OF RHENIUM FROM MOLYBDENITE

Philip E. Lapat, New Haven, and Walter C. Hellyer, Danbury, Conn., assignors to Newmont Exploration Limited, Danbury, Conn.

Filed Dec. 6, 1971, Ser. No. 205,058
Int. Cl. C10g *47/00, 39/00*
U.S. Cl. 423—50 **6 Claims**



The conventional oxidative roasting of molybdenite concentrate to molybdenum trioxide with separation of a gaseous effluent containing the indigenous rhenium content of the molybdenite is modified to reduce the dilution of the oxidized rhenium vapor species in the gaseous effluent by substituting a mixture of oxygen and water for air in the roasting reaction, the water serving to prevent excessive temperature generation during roasting so as to maintain the roasting zone temperature at about 600° C. The resulting gaseous effluent is then cooled to condense much of its water vapor content.

3,798,307

SEPARATION OF NICKEL FROM SALT MIXTURES CONTAINING NICKEL AND OTHER METAL SALTS

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,234
Int. Cl. C22b *23/04*; C01g *53/12*
U.S. Cl. 423—143 6 Claims

A new method for the separation of nickel from a metal salt mixture is disclosed. The method involves dissolution of the salt mixture at an elevated temperature in a solution of ammonium hydroxide and ammonium chloride, rapidly cooling the solution under controlled condition of pH and ammonium chloride concentration to selectively separate nickel as crystalline nickel ammine chloride.

3,798,308

METHOD FOR TREATING COKE OVEN GAS

Benjamin F. Tatterson, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Jan. 19, 1972, Ser. No. 219,068
Int. Cl. C01b *17/00, 17/02*
U.S. Cl. 423—574 7 Claims

The elimination of atmospheric pollution resulting from sulfur-containing tail gases produced in a hydrogen sulfide conversion process associated with a coke oven gas by-product recovery system is described. The sulfur-containing components of the tail gas are removed by first combining the tail gas with crude coke oven gas in the by-product recovery system. Sulfur dioxide and the other gaseous sulfur-containing components of the tail gas are removed from the combined gases by the various gas-treatment phases of the by-product recovery system or pass through the system and are subsequently burned or vented to the atmosphere at less objectionable concentrations.

3,798,309

PROCESS FOR RECOVERING SULFUR DIOXIDE FROM GASES USING AQUEOUS SALT SOLUTION OF GLUTARIC ACID

William S. Knowles and Sabet Abdou-Sabet, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 2,585, Jan. 19, 1970. This application July 31, 1972, Ser. No. 276,350
Int. Cl. B01d *53/34*
U.S. Cl. 423—243 10 Claims

Gases containing sulfur dioxide, such as flue gases, are passed into effective contact with an absorbent liquid comprising an aqueous solution of a water-soluble alkali metal or amine salt of a polybasic acid at a temperature below about 90° C. to effect removal of sulfur dioxide from the gases and, if desired, the sulfur dioxide is thereafter recovered by heating the organic salt solution in which it is dissolved to a temperature in excess of about 90° C.

3,798,310

METHOD OF REMOVING SULFUR OXIDE FROM GASES

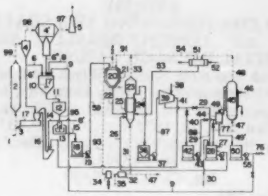
Masumi Atsukawa, K1–1304 Mitsubishi Apartment House, 5, 1-chome, Kougominami-machi; Yoshihiko Nishimoto, 522–12 Danbarahinode-machi; and Kazuhiro Matsumoto, % Mr. Ono, 641–1, Kusatsuminami-machi, all of Hiroshima, Japan

Continuation-in-part of application Ser. No. 864,961, Oct. 6, 1969, which is a continuation of application Ser. No. 548,340, Mar. 4, 1966, both now abandoned. This application Dec. 8, 1970, Ser. No. 96,162
Claims priority, application Japan, Mar. 24, 1965, 40/17,091
Int. Cl. B01d *53/16, 53/34*
U.S. Cl. 423—244 14 Claims

A process of employing an economically-attractive sulfur oxide absorbent, the absorbent being an activated hydrated-manganese oxide characterized by electron microscope-determined microscopic particles of one or more of string or plate or foil shape(s), by 4.6 or 7.18 angstroms distance between atomic planes at maximum defraction strength of line, by a formula

$$MnO_{1.5-1.8} \cdot (0.1-1.0)H_2O$$

and by a sulfur oxide-absorption capacity ranging from about 0.2 (i.e., 20%) greater to about 10 times greater absorption capacity as compared to typically: ammonium



persulfate/manganese sulfate-derived and electrolytically-derived $MnO_{1.88}$, and sodium carbonate/manganese sulfate-derived Mn_2O_3. A preferred cyclic process employing pressurized air or oxygen bubbles of small size to thereby rapidly oxidize an aqueous mixture of manganese sulfate and an excess of ammonium hydroxide results in an industrially-attractive process which heretofore has been industrially unacceptably inefficient and high-cost when employing other types of manganese oxide.

3,798,311

DIRECT SYNTHESIS OF FAUJASITE ZEOLITES CONTAINING SODIUM AND LITHIUM

Jean-Louis Guth, Mulhouse, Albert Pereyron, Brunstatt, and Raymond Wey, Mulhouse, France, assignors to Azote et Produits Chimiques S.A.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,204
Claims priority, application France, Sept. 18, 1970, 7033911; Mar. 10, 1971, 7108244
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 15 Claims

Lithium-containing faujasites are produced without the necessity of an ion exchange step. A gel is first formed of an aluminosilicate containing all of the alumina required for the crystallization mixture. The gel is then modified by the addition of reactive silica and, if necessay, other components to yield specified molar ratios relating to Al_2O_3, SiO_2, Na_2O, Li_2O and H_2O values. The resultant crystallization mixture is treated to crystallize out the lithium-containing faujasite.

3,798,312

PROCESS FOR PREPARATION OF CHLORINE NITRATE

Donald Pilipovich, Agoura, Calif., and Charles B. Lindahl, Sand Springs, Okla., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,651
Int. Cl. C01b *21/20, 21/52*; C01f *11/22*
U.S. Cl. 423—386 3 Claims

A novel preparation of chlorine nitrate by reacting FNO_2 and $Ca(OCl)_2$.

3,798,313
PRODUCTION OF BISMUTH OXYCHLORIDE CRYSTALS OF ENHANCED LUSTER AND COVERING POWER
Paul W. Wetzold, Armonk, N.Y. (% Paispearl Products, Inc., 24 Acqueduct Lane, Hastings-on-Hudson, N.Y. 10706)
No Drawing. Filed Nov. 11, 1971, Ser. No. 197,975
Int. Cl. C01b *11/00*
U.S. Cl. 423—472 **13 Claims**

Bismuth oxychloride crystals of enhanced luster and covering power are provided by forcing the crystal to grow small and thin. This is accomplished by hydrolyzing bismuth salt dissolved in water using hydrochloric acid with the bismuth salt being first caused to form crystal nuclei using a relatively stable aqueous solution thereof in which the Bi/HCl weight ratio is from 0.2:1 to 0.8:1, and then completing crystal growth using a relatively unstable solution having a Bi/HCl weight ratio of from 1:1 to 2:1.

3,798,314
PROCESS OF MANUFACTURING ANHYDROUS MAGNESIUM CHLORIDE
Yuichi Suzukawa, Waichi Kobayashi, Kinzi Uehori, Satoshi Ohtaka, and Kozaburo Yoshida, Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan
No Drawing. Filed June 26, 1972, Ser. No. 266,302
Claims priority, application Japan, July 22, 1971, 46/54,195
Int. Cl. C01c *1/16*; C01f *5/30*
U.S. Cl. 423—498 **7 Claims**

High purity anhydrous magnesium chloride useful for producing metallic magnesium is manufactured by the process wherein hydrous ammonium carnallite is converted to anhydrous ammonium carnallite ammonate by contacting it with gaseous ammonia, the anhydrous ammonium carnallite ammonate is further converted to anhydrous magnesium chloride by thermally decomposing it, and the anhydrous magnesium chloride is isolated by evaporating ammonium chloride and ammonia from the decomposition product.

3,798,315
TREATMENT OF GASES
Thomas Nicklin, Bamford, Rochdale, England, assignor to The Gas Council, London, England
Filed Oct. 26, 1971, Ser. No. 192,032
Claims priority, application Great Britain, Oct. 27, 1970, 51,062/70
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 **2 Claims**

A process for the production of sulphur from a gaseous mixture containing hydrogen sulphide and sulphur dioxide. The gaseous mixture in a reactor vessel is contacted with a catalyst comprising oxides of nickel and uranium whereby hydrogen sulphide and sulphur dioxide are reacted together to yield sulphur.

3,798,316
PURIFICATION OF CLAUS PLANT TAIL GAS BY WATER WASHING
David K. Beavon, Los Angeles, Calif., assignor to The Ralph M. Parsons Company, Los Angeles, Calif.
Filed Sept. 8, 1972, Ser. No. 287,589
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 **5 Claims**

The effluent from a Claus sulfur plant is passed to a relatively high temperature reaction-absorption zone where, in the presence of water as the absorption-reaction medium, there is formed sulfur by reaction of the hydrogen sulfide and sulfur dioxide and other sulfurous compounds such as polythionic and sulfurous acids.

The water containing sulfur and the other sulfurous compounds is recycled back to one of the Claus conversion stages where the formed sulfurous compounds dissociate into sulfur, hydrogen sulfide and sulfur dioxide for conversion to elemental sulfur in the Claus reactor.

The residual gas stream is then passed to a second absorption zone to remove residual sulfur dioxide and to a final water condensation zone before being vented to the atmosphere.

3,798,317
NON-CAKING AEROSOL ANTI-PERSPIRANT COMPOSITION
Larry Austin Gorum, Winter Park, Fla., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 24, 1971, Ser. No. 201,989
Int. Cl. A61k *7/00*
U.S. Cl. 424—47 **4 Claims**

An aerosol anti-perspirant formulation comprising a fluorocarbon propellant, a dispersion of aluminum chlorohydroxide and fumed silica in an ethanol and 1,2-propylene glycol solution of aluminum chlorohydroxide-propylene glycol complex wherein the concentration of fumed silica is from about 1.0 to about 1.7 weight percent.

3,798,318
METHODS AND COMPOSITIONS FOR SELECTIVELY ATTRACTING YELLOW-JACKET WASPS
Robert H. Wright, Vancouver, British Columbia, Canada, assignor to British Columbia Research Council, Vancouver, British Columbia, Canada
Continuation of abandoned application Ser. No. 1,140, Jan. 7, 1970. This application July 12, 1972, Ser. No. 270,989
Int. Cl. A01n *17/14*
U.S. Cl. 424—84 **2 Claims**

There is disclosed improvements in the methods of selectively attracting yellow-jacket wasps and compositions for this purpose. A composition comprising any one or any combination of normal pentyl pentanoate, normal butyl benzoate, or dimethyl benzyl carbinyl acetate is placed in a trap and exposed to the atmosphere to attract the wasps.

3,798,319
THERAPEUTIC AND DIAGNOSTIC ALLERGENIC EXTRACT AND PROCESS FOR PREPARING SAME
Kermit Maynard Espey, Elkhart, Ind., and John Joseph Gavin, Hamden, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed June 4, 1968, Ser. No. 734,235
Int. Cl. A61k *23/00*
U.S. Cl. 424—91 **1 Claim**

A process for preparing therapeutic and diagnostic antigenic or allergenic extracts comprising extracting and treating substances known to contain physiologically active principles which elicit allergenic responses with an aqueous-organic solvent extracting fluid, separating the extracting fluid containing the active principles from the insoluble material therein and then volatilizing and removing the extracting fluid to thereby isolate said active principles in the form of a dry powder. The dry powder may then be further processed to provide an allergenic extract in a selected one of various forms known in the art of therapeutic and diagnostic immunology.

3,798,320
PRECIPITATION OF BACTERIAL CELLS WITH POLYMERS
Karl Eugene Weiss and Colin McKenzie Cameron, Pretoria, Transvaal, Republic of South Africa, assignors to South African Inventions Development Corporation, Scientia, Pretoria, Transvaal, Republic of South Africa
No Drawing. Filed Sept. 9, 1971, Ser. No. 179,200
Claims priority, application Republic of South Africa, Sept. 18, 1970, 70/6,404, 70/6,407
Int. Cl. C12k *1/00*
U.S. Cl. 424—92 **18 Claims**

Bacteria are rendered indispersable in aqueous medium, e.g. aqueous culture fluid by means of a linear fila-

mentary non-charged polymer precipitant, preferably a polyalkylene glycol such as PEG within the preferred molecular weight range of 2,000 to 30,000. The invention can be applied to a wide range of applications in the field of immunology, particularly in the manufacture of vaccines. Bacterial matter can be concentrated as a useful product or removed from other substances, e.g. toxins to purify the latter. Thus, i.a. novel vaccine against pulpy kidney disease is produced, containing the immunologically valuable toxoids free of bacteria cells.

3,798,321

PRESERVATIVE AND NITRATE REDUCING AGENT FOR RAW AGRICULTURAL CROPS

Rolland W. Nelson, 1125 18th St., West Des Moines, Iowa 50265

No Drawing. Original application Mar. 22, 1966, Ser. No. 542,441, now Patent No. 3,624,222, dated Nov. 30, 1971. Divided and this application June 1, 1970, Ser. No. 42,560

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. A01n *13/00*

U.S. Cl. 424—128 **1 Claim**

A preservative and nitrate reducing agent for raw agricultural crops consisting of an inorganic acid, namely, phosphoric acid and an organic acid consisting of propionic acid. The method of reducing the nitrate value of crops by treating said crops with the foregoing composition is disclosed.

3,798,322

6 OR 7-SUBSTITUTED 4 OR 8-(AMINO-1-METHYLBUTYLAMINO)QUINOLINES AS HYPOLIPIDEMIC AGENTS

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,310

Int. Cl. A61k *27/00*

U.S. Cl. 424—200 **7 Claims**

6 or 7-substituted 4 or 8-(4-amino-1-methylbutylamino)quinolines, e.g., 6-methoxy-8-(4-amino-1-methylbutylamino)quinoline or 7-chloro-4-(4-diethylamino-1-methylbutylamino)quinoline. The compounds are useful as hypolipedemics.

3,798,323

METHODS OF CONTROLLING MYCOTOXIN PRODUCTION USING CERTAIN DIALKYL ENOL PHOSPHATES

John S. Leary, Jr., Alamo, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,975

Int. Cl. A01n *9/36*

U.S. Cl. 424—212 **11 Claims**

Mycotoxin production by a fungus is controlled or inhibited by subjecting the fungus to an effective amount of a dialkyl enol phosphate.

3,798,324

METHOD FOR CONTROLLING TREMOR SYMPTOMATIC OF PARKINSONISM UTILIZING 1-(2-PYRIDYL) PIPERAZINE

Rodolfo Rodriguez, Mexico City, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,112

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **4 Claims**

Administration of an effective amount of 1-(2-pyridyl) piperazine or a nontoxic acid addition salt thereof controls tremor symptomatic of parkinsonism in mammals. Daily doses ranging from 10 mg./kg. to 90 mg./kg. are considered effective.

3,798,325

IMIDAZOLIDINONE DERIVATIVES AS CENTRAL NERVOUS SYSTEM DEPRESSANTS

Walter Schindler, Riehen, Basel-Land, and Armin Zuest, Birsfelden, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 5, 1970, Ser. No. 61,435, now Patent No. 3,720,676. Divided and this application Dec. 21, 1972, Ser. No. 317,341

Claims priority, application Switzerland, Aug. 11, 1969, 12,120/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **4 Claims**

Compounds of the class of 1-[2- and 3-[4-(10,11-dihydro-5H-dibenzo[a,d]cyclohepten - 10 - yl) - 1 - piperazinyl]-allyl] - 3 - alkyl - 2 - imidazolidinone which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-blooded animals, are provided; an illustrative embodiment is 1-[2-[4-(8-methyl-10,11-dihydro - 5H - dibenzo[a,d]cycolhepten-10-yl)-1-piperazinyl]-ethyl] - 3 - methyl - 2 - imidazolidinone-bis-maleate.

3,798,326

5,5 - DIMETHYL - 10 - HYDROXY-8-(3-METHYL-2-OCTYL)-2-(2-PROPYNYL) - 1,2,3,4-TETRAHYDRO-5H - (1)BENZOPYRANO[3,4-d]PYRIDINE AS AN ANTI-HYPERTENSIVE AGENT

Louis Selig Harris, Chapel Hill, N.C., Harry George Pars, Lexington, and Raj Kumar Razdan, Belmont, Mass., assignors to Sharps Associates, Cambridge, Mass.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,440

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **2 Claims**

A method of reducing blood pressure in hypertensive mammalian patients comprising administering a therapeutically effective amount of 5,5-dimethyl-10-hydroxy-8-(3-methyl - 2 - octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridine to said patient.

3,798,327

FUNGICIDAL COMPOSITIONS AND THEIR USE

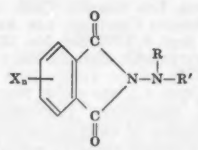
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.Y.

No Drawing. Original application Feb. 8, 1971, Ser. No. 113,710, now Patent No. 3,734,925. Divided and this application Oct. 26, 1972, Ser. No. 301,000

Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **10 Claims**

Fungicidal compositions that are suitable for use on living plant materials contain as their fungicidally-active component a compound havng the structural formula



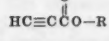
wherein X represents a lower alkyl group or phenyl; *n* represents an integer in the range of 1 to 4; R represents hydogen or a lower alkyl group; R′ represents hydrogen, a lower alkyl group, or the group —COOR″; and R″ represents a lower alkyl group.

3,798,328
PROPIOLIC ACID ESTERS AS INDUSTRIAL MICROBICIDES

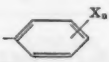
Akira Fujinami, Ashiya, Masaaki Hosomi, Amagasaki, Toshikazu Minami, Osaka, and Jasakazu Asai, Kyoto, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,745
Claims priority, application Japan, Apr. 15, 1970, 45/32,556
Int. Cl. A01n *9/00, 9/24*
U.S. Cl. 424—314 **5 Claims**

Propiolic acid ester having the formula,



wherein R is a cyclohexyl group or a group of the formula $—CH_2—R'$ where R' is a lower aralkyl group, a saturated or unsaturated phthalimide group, or a group of the formula



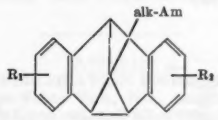
where X is a halogen atom, a nitro group, a lower alkyl group or a lower alkoxy group, and *n* is an integer of 1 to 5 is strong in microbicidal activity. Particularly, it is extremely high in biological activity against molds, low in toxicity and high in workability, and hence is quite useful as an industrial microbicide.

3,798,329
1-AMINOALKYL-DIBENZOSEMIBULLVALENES AS ANTIDEPRESSANTS

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 854,270, Aug. 29, 1969, which is a continuation-in-part of application Ser. No. 779,257, Nov. 26, 1968. This application Apr. 22, 1970, Ser. No. 30,988
Int. Cl. A61k *27/00*
U.S. Cl. 424—330 **4 Claims**

1-aminoalkyl-dibenzosemibullvalenes, e.g. those of the formula



Am=an amino group
alk=alkylene
$R_{1,2}$=H, alkyl, free, etherified or esterified OH or SH, CF_3, NO_2, amino or acyl, ocyl derivatives, N-oxides, quaternaries and salts thereof are antidepressants.

3,798,330
METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING POLYPENTAERYTHRITOL HALOACETALDEHYDE HEMIACETALS

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of applications Ser. No. 881,868, Dec. 3, 1969, now abandoned, Ser. No. 881,915, Dec. 3, 1969, now Patent No. 3,615,649, and Ser. No. 78,188, Oct. 5, 1970, now Patent No. 3,745,221. This application Mar. 17, 1971, Ser. No. 125,371
Int. Cl. A61k *27/00*
U.S. Cl. 424—342 **14 Claims**

Polypentaerythritol haloacetaldehyde hemiacetals are potent inhibitors of methanogenesis in the ruminant animal. Consequently these chemical agents improve the feed efficiency in ruminants at levels which do not have general antifermentation effects in the animal. The most useful and representative compounds are the dipentaerythritol penta- and hexachloral hemiacetals and tripentaerythritol hexa-, hepta- and octachloral hemiacetals. Methods of administration, feed compositions and premixes containing said inhibitors are described. The preparation of feed mixtures using these compounds is much easier due to their physical stability.

3,798,331
NEUTRAL FERMENTED ALCOHOLIC BEVERAGE

Vincent S. Bavisotto, Simsbury, Conn., and Joseph J. Tschida, Jr., Cumberland, Wis., assignors to Theodore Hamm Company, St. Paul, Minn.

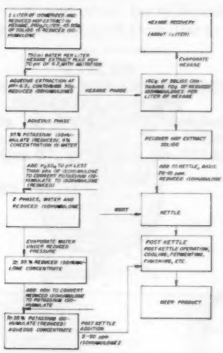
No Drawing. Continuation-in-part of abandoned application Ser. No. 810, Jan. 5, 1970. This application Sept. 13, 1972, Ser. No. 288,849
Int. Cl. C12c *11/00*
U.S. Cl. 426—16 **4 Claims**

A neutral tasting fermented alcoholic base substrate is prepared by yeast-fermenting a boiled aqueous medium containing malt or malt extract, glucose, hop extract or hops, soya flakes and inorganic salts.

3,798,332
PREPARATION OF HOT EXTRACTS AND USE IN BEER MAKING OPERATION

Donald H. Westermann, Brookfield, and Etzer Chicoye and Darrell R. Hoffmann, Milwaukee, Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Filed Jan. 10, 1972, Ser. No. 216,424
Int. Cl. C12c *9/02*
U.S. Cl. 426—29 **13 Claims**



Hop extract in, e.g., hexane, preisomerized, optionally prereduced, is extracted with aqueous KOH to give potassium isohumulate of 80%+ and preferably 90%+ purity. The hexane phase containing the remainder of the isohumulones is stripped of solvent and is suitable for kettle addition.

In order to prevent foaming during subsequent concentration, the aqueous extract containing about 6% solids is acidified to a pH less than the pK_a of isohumulone and is concentrated under reduced pressure. After concentration, the material is treated with KOH to form the water soluble isohumulone salt which is added to beer postkettle. At a critical optimum pH range, dependent upon the ratio of water to hexane phase used in the initial extraction, from 0.1 to 0.75 of the isohumulones may be extracted in the highly purified form.

A generalized technique for establishing conditions that will give such desired fractions and residues is disclosed.

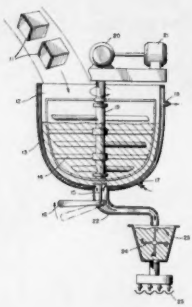
3,798,333
PACKAGING BANANAS IN CARBON DIOXIDE PERMEABLE FILM
Alfred Samuel Cummin, Westfield, Henryk Daun, New Brunswick, and Seymour George Gilbert and Yair Henig, Piscataway, N.J., assignors to Borden, Inc.
No Drawing. Filed Mar. 31, 1972, Ser. No. 239,867
Int. Cl. B65b *25/04*
U.S. Cl. 426—106 8 Claims

The ripening time of green bananas can be prolonged and the period of time they remain ripe can be extended by packaging the bananas in a film which has an oxygen permeability of 1,000 or more, a carbon dioxide permeability of 3,000 or more, and a ratio of carbon dioxide permeability to oxygen permeability of at least three.

3,798,334
MEAT TENDERIZATION METHOD
Roscoe T. Earl, Glenview, Ill., and Leonard M. Waldt, Springfield, N.J., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Filed Dec. 21, 1971, Ser. No. 210,553
Int. Cl. A22c *18/00*
U.S. Cl. 426—58 3 Claims

The method of tenderizing meat by injection of enzyme solution in admixture with 0.1% to 0.4% by weight of the solution of tragacanth.

3,798,335
METHOD FOR EMBOSSMENT PACKAGING OF WARM BUTTER
Leo Peters, 750 Plymouth Road SE., Grand Rapids, Mich. 49506
Filed Nov. 26, 1971, Ser. No. 202,168
Int. Cl. A33c *15/00*; B65b *25/00*
U.S. Cl. 426—130 12 Claims

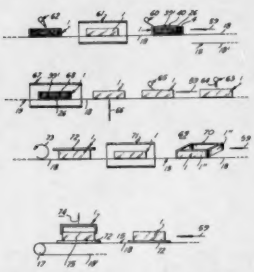


Nonwhipped butter or margarine is packaged, after it has been churned, by elevating its temperature until it is flowable under its own weight, and then, while under agitation, flow-filling it into embossing dies or packages.

3,798,336
METHOD FOR CENTERING SOLID BODIES WITHIN A COAGULABLE LIQUID
Robert Lyle Hawley, Webster Groves, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 15, 1971, Ser. No. 124,054
Int. Cl. A23l *1/32*
U.S. Cl. 426—279 11 Claims

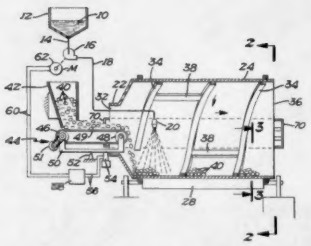
A container having a discrete body and liquid coagulable material therein is subjected to cyclical or vibratory motion while being heated whereby the discrete body floats within the coagulable material as it is coagulated substantially concentrically about the discrete body.

3,798,337
PROCESS FOR THE CONTINUOUS MANUFACTURE OF FOAMED SWEETS
Juan Manuel Abalo, Buenos Aires, Argentina, assignor to Noel y Compania Limitada Sociedad Anoniam Argentian de Dulces y Conservas
Filed July 22, 1971, Ser. No. 165,064
Int. Cl. A23g *31/18*; B29d *27/04*
U.S. Cl. 426—279 13 Claims



Process and equipment for continuously manufacturing foamed sweets preferably sheathed with a noncellular shell by housing the foamable mass in a mold which may already include the shell, subjecting the foamable mass to progressive expansion by stepwise increasing vacuum in a moving sealed inclosure and then subjecting to high vacuum and simultaneous decreasing cooling.

3,798,338
METHOD FOR APPLYING THERMOPLASTIC COATINGS TO FOOD AND PHARMACEUTICAL PRODUCTS
Edward L. Galle, St. Paul, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed May 30, 1972, Ser. No. 258,139
Int. Cl. A23b 7*/00*; A23g *3/00*; A23l *1/00*
U.S. Cl. 426—307 4 Claims



Thermoplastic protective or moisture resistant coatings, e.g. hydrogenated vegetable oil, are applied to a food product by metering the food product and the thermoplastic coating into a coating zone, maintaining the thermoplastic coating material in a liquid consistency in the coating zone while minimizing the heating of the food product to thereby establish a temperature differential between the coating and the food product and agitating the food product to spread the heated liquid coating over the surface of the food product as a continuous film and allowing the liquid to congeal on the surface of the food product. Typically, heat is applied to the outside surface of a rotating coating cylinder to heat or maintain the coating material in a liquid condition by conduction.

3,798,339
PREPARATION OF A MILK SUBSTITUTE PRODUCT

Andrew Chung-Yen Peng, Columbus, Ohio, assignor to Swift & Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 644,788, June 9, 1967. This application May 13, 1968, Ser. No. 728,763

Int. Cl. A23c *11/00*

U.S. Cl. 426—357 7 Claims

A highly nutritious milk-substitute type product is prepared by mixing soybean material with certain milk materials or by-products, particularly whey, in a liquid mixture and then boiling and grinding the mixture to a smooth consistency. The characteristic beany flavor of soybean materials will thereby be greatly reduced. Full-fat, defatted toasted and untoasted whole and cracked beans as well as flaked beans and soy flour may be utilized. The mixture thus prepared may be further processed to produce a dry powder that can be reconstituted by mixing with water.

3,798,340
MANUFACTURE OF SALTED CHEESE

George W. Reinbold and Earl G. Hammond, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 3, 1972, Ser. No. 214,739

Int. Cl. A23c *19/02*

U.S. Cl. 426—361 15 Claims

Rindless Swiss cheese, or other brine-salted or dry-salted cheese, is manufactured by an improved process in which porous absorbent coverings, such as sponge pads, are applied to outer absorptive surfaces of the formed curd bodies. An aqueous salt brine of a concentration promoting osmotic diffusion is provided within the porous coverings and impermeable close-fitting coverings are applied around the cheese bodies and porous coverings. The cheese bodies are then held while the salt is transferred from the porous coverings into the cheese bodies, the holding being continued until curing is complete, and/or the cheese bodies contain the desired amount of salt. The process is particularly advantageous for producing rindless, salted, cured cheese without significant loss of moisture.

3,798,341
PERCOLATION PROCESS

Irwin L. Adler, River Vale, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,125

Int. Cl. A23f *1/08*

U.S. Cl. 426—432 3 Claims

A process of producing coffee extract by contacting roasted and ground coffee with an aqueous extraction liquor in a percolator set is disclosed wherein the direction of flow of the aqueous extraction liquid through each of the extraction columns in a cycle is reversed in the succeeding cycle. The process of this invention significantly decreases the heat exposure differences which a bed of coffee receives during extraction resulting in a more uniform extraction and a higher quality coffee extract.

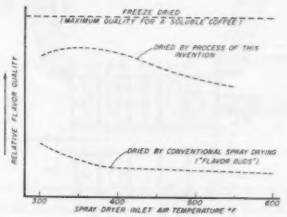
3,798,342
PROCESS FOR PRODUCING HIGH QUALITY SPRAY DRIED COFFEE

Arno Huste, Rego Park, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation of abandoned application Ser. No. 20,949, Mar. 19, 1970. This application Aug. 23, 1972, Ser. No. 282,994

Int. Cl. A23f *1/08*

U.S. Cl. 426—471 6 Claims



A spray dried soluble coffee of improved quality is produced by carefully controlling the spray drying conditions within specified limitations. The extract is concentrated to a solids content of 31 to 40% and is cooled to between 30 to 60° F. prior to drying. The dryer inlet air temperature is maintained from 300 to 550° F., and the outlet temperature is maintained between 190 to 230° F. The pressure at the spray dryer nozzle is maintained at from 700 to 2500 p.s.i.g. and must be sufficient to produce droplets with a maximum size of from 100 to 300 microns.

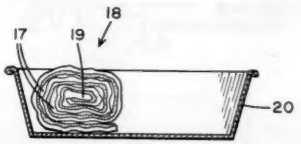
3,798,343
PROCESS FOR PREPARING FROZEN ROLLED LASAGNA

Constance Vitale, St. Paul, Minn., assignor to Vitale's Italian Foods, Inc., St. Paul, Minn.

Filed Oct. 27, 1971, Ser. No. 192,887

Int. Cl. A23b *1/00*

U.S. Cl. 426—502 4 Claims



Precooked, frozen lasagna is prepared by coating a noodle with a meat composition, rolling the noodle into a spiral roll with the meat surface facing inward, and freezing the rolled noodle.

ELECTRICAL

3,798,344

CHANNEL TYPE INDUCTION FURNACE

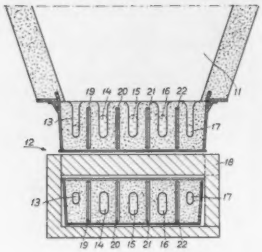
Conny Andersson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 21, 1973, Ser. No. 372,190

Claims priority, application Sweden, June 26, 1972, 8360/72

Int. Cl. F27d *11/06;* **H05b** *5/12*

U.S. Cl. 13—29 **12 Claims**



A channel type induction furnace with a furnace body having a hearth and an inductor arranged below the hearth has melt channels opening into the hearth below the normal surface of the bath. The melt channels are vertically directed. At least two disc cores of substantially greater height than thickness are provided with their windings located substantially parallel to the plane of the channel and positioned on both sides of all the channels except the outermost one.

3,798,345

OIL FILLED ELECTRIC SUBMARINE CABLE WITH OIL DUCT RESTRICTORS

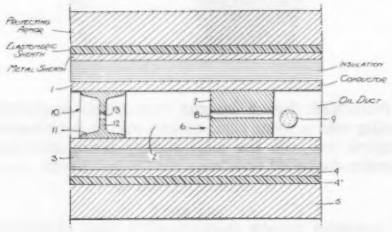
Paolo Gazzana Priaroggia, Milan, and Antonio Ferrentino, Monza, both of Italy, assignors to Industrie Pirelli Societa Per Azioni, Milan, Italy

Filed June 18, 1973, Ser. No. 371,123

Claims priority, application Italy, July 3, 1972, 26535 A/72

Int. Cl. H01b *9/06*

U.S. Cl. 174—14 R **5 Claims**



An oil-filled, electric, submarine cable having an oil duct with a plurality of water blocking restrictors, e.g., blocks or diaphragms with holes of the size which prevent the passage of water drops but which permit the passage of oil, thereby confining, in the event of damage to the cable, water drops to the section of the cable between restrictors.

3,798,346

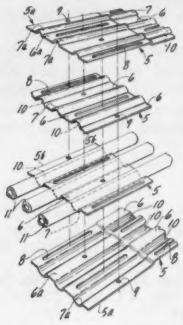
POWER TRANSMISSION APPARATUS, ESPECIALLY CABLE AND CABLE BUS HOUSINGS

Julius E. Kreuzer, Sewickly, Pa., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 16, 1973, Ser. No. 351,294

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 C **5 Claims**



Cables of round cross section, e.g., circular or ovate, and a cable bus housing assembly therefor are disclosed wherein the housing assembly is based essentially on similar panels which may be connected together into two opposed series of end-to-end connected panels. Normally, a plurality of cables are received between the panels with the opposed series secured together to cause substantial contact of concave surfaces of the panels with the peripheral surfaces of the cables. The housing assembly is designed especially for conducting heat out of the enclosed electrical conductors and dissipating the heat to the surrounding atmosphere by radiation and convection.

3,798,347

IMPROVEMENTS IN OR RELATING TO A CRIMPING CLIP FOR ELECTRICALLY CONNECTING TOGETHER ELECTRICAL CONDUCTORS

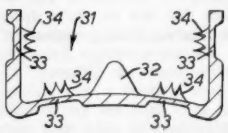
John Patrick Harding, Bushey; David Sydney Butler, Hassocks, and Frank James Lee, Okehampton, all of England, assignors to The Post Office, London, England

Filed Jan. 10, 1972, Ser. No. 216,410

Claims priority, application Great Britain, Jan. 11, 1971, 1192/71

Int. Cl. H02g *15/08*

U.S. Cl. 174—84 C **7 Claims**



A crimping clip for jointing individual conductors in a multi-conductor cable has tangs formed in areas of the clip over which the thickness is reduced as compared with other areas. Alternatively, the tangs are formed in a liner placed inside the clip and whose thickness is less than that of the clip.

3,798,348

CONNECTOR FOR AN ELEMENT OF THE COAXIAL TYPE

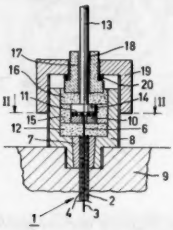
Cornelis Hendrik van Toorn, Bennebroekerdijk 213, Haarlemmermeer, Netherlands

Filed June 22, 1971, Ser. No. 155,599

Claims priority, application Netherlands, June 23, 1970, 7009163; June 23, 1970, 7009164

Int. Cl. H02g *15/08*

U.S. Cl. 174—84 S **6 Claims**



The invention relates to a contact connection between a heating element of the coaxial type and a thicker connection pin. The connector comprises a sleeve closed by a pressure member in which a disk of soft sintered ceramic material is pulverized by moving said pressure member and is compressed as a compact mass around the bare part of the conductor projecting beyond the sheath, the end of the conductor being connected to the connection pin in a clamping connection.

3,798,349

MOLDED PLASTIC SPLICE CASING WITH COMBINATION CABLE ANCHORAGE AND CABLE SHIELDING GROUNDING FACILITY

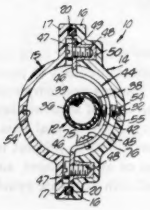
John T. Thompson, 244 Loring St., Los Angeles, and George W. Gillemot, 2331 20th St., Santa Monica, both of Calif.

Continuation-in-part of Ser. No. 12,819, Feb. 19, 1970, Pat. No. 3,614,298.

Filed July 27, 1971, Ser. No. 166,386. The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.

Int. Cl. H02g *15/08*

U.S. Cl. 174—92 **2 Claims**



A cable splice casing cast in two mating halves from high strength plastic material and equipped with one or more conductive anchor assemblies for mechanically and electrically connecting the cable shield and sheath jackets to each end of the casing while the latter is open. The casing acts to interconnect the cable sheath across the splice area and to provide electrical continuity between the respective cable shield jackets. A heavy gauge conductor along the interior of the casing interconnects the cable anchor assemblies located at the opposite ends of the casing to carry heavier electrical charges whereas a conductive liner for the splice casing provides electrical shielding for the portion of the cabling exposed for making splice connections. The anchorages are spaced inwardly of a sealing gasket at each end of the casing and the latter can be opened for servicing and testing without disturbing the cable anchorage or the grounding connection between the cables and the casing.

3,798,350

CO-AXIAL CABLE WITH STRENGTH MEMBER

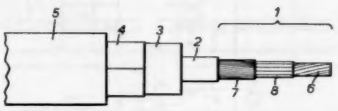
Eric Fifield Stuart Clarke, Harrow, England, assignor to The Post Office, London, England

Filed Jan. 22, 1973, Ser. No. 325,450

Claims priority, application Great Britain, Jan. 28, 1972, 4232/72

Int. Cl. H01b *7/18*

U.S. Cl. 174—102 R **9 Claims**



A telecommunication submarine cable of co-axial construction has a multistrand centre core imparting tensile strength to the cable, the core having adjacent layers of the core separated by a layer of soft metal.

3,798,351

ELECTRIC INSULATORS HAVING NON-CORONA AND ANTI-POLLUTION PROPERTIES

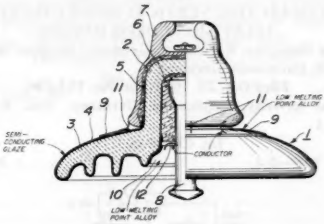
Kaoru Tsuzuki, Nagoya, and Setsuo Kozaka, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Oct. 25, 1972, Ser. No. 300,574

Claims priority, application Japan, Nov. 1, 1971, 46-86280

Int. Cl. H01b *17/42, 17/50*

U.S. Cl. 174—140 C **4 Claims**



An electric insulator for maintaining excellent non-corona property and pollution resistant property for a long period of time, comprises a porcelain body provided at its both poles with metal fittings fixed thereto by means of cement, a semiconducting glaze applied to the porcelain body and projected slightly into the cement and connecting said both poles, low melting point alloy portions applied directly on said semi-conducting glaze and kept in a substantial insulation from said metal fittings, and conductors connecting electrically said metal fittings to said low melting point alloy portions, respectively.

3,798,352

AUTOMATIC TINT CONTROL CIRCUIT

Roy A. Ekstrand, 1209 Woodlane, Prospect Heights, Ill.

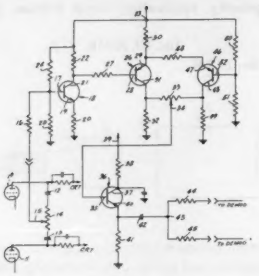
Filed Apr. 1, 1971, Ser. No. 130,095

Int. Cl. H04n *9/12*

U.S. Cl. 178—5.4 HE **11 Claims**

An automatic tint control circuit having means for developing an error signal in response to the deviation of the phase of the chroma signal from a preselected phase such as a flesh

tone phase and for using the error signal to recombine with the chroma signal to shift the phase of the chroma signal in a direction toward the predetermined phase. Means are provided to sample a given proportion of the outputs of each of the R-Y and B-Y color difference amplifiers. The proportion of each determines the predetermined phase about which correction is desired. The sample proportion of each is combined and coupled through a transistor circuit to the inputs of both the R-Y and B-Y color demodulators. The result is an extremely simplified circuit for accomplishing the desired phase shift of the chroma signal The transistor circuit employed includes an arrangement to cancel the error or correction signal when the chroma signal is in a highly saturated green position. This prevents the operation of the correction circuit for colors which are not close to the flesh tone region and which preferably not be shifted. The same circuit arrangement also has means for cancelling the horizontal blanking pulse in the correction signal to avoid interference with DC restoration at the color difference amplifiers.



3,798,353

CORRECTING VERTICAL RESOLUTION IN TELEVISION COLOR IMAGES

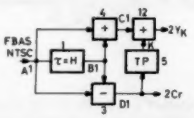
Gerhard Illetschko, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Oct. 28, 1971, Ser. No. 193,886

Claims priority, application Germany, Oct. 31, 1970, 2053513

Int. Cl. H04n *5/14*

U.S. Cl. 178—5.4 **14 Claims**



A luminance signal is formed by adding an undelayed color signal and a delayed color signal. A chrominance signal is formed by subtracting the undelayed and delayed signals. A low frequency component in the chrominance signal is removed and is added to the luminance signal as a correction signal.

3,798,354

COLOR RESOLVING OPTICAL SYSTEM FOR A COLOR TELEVISION CAMERA

Michiko Asou, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

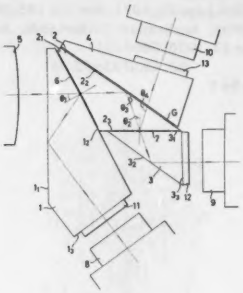
Filed Apr. 12, 1972, Ser. No. 243,196

Claims priority, application Japan, Apr. 17, 1971, 46-24268

Int. Cl. H04n *9/12*

U.S. Cl. 178—5.4 E **12 Claims**

A color resolving optical system for a color television camera which is characterized by that in a color resolving optical system for a color television camera being positioned between a photographing lens and color image pickup tubes, the system comprises three prisms, three prism planes of which are utilized, and one prism, two prism planes of which



are utilized, and two dichroic mirrors provided at the planes where said prisms are adjoining together, wherein same number of reflections are made in each of three primary colors.

3,798,355

FLYING-SPOT SCANNER SYSTEM

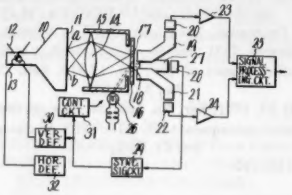
Senri Miyaoka, Kanagawa, and Akio Ohgoshi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,809

Claims priority, application Japan, July 24, 1971, 46-45822

Int. Cl. H04n *9/04*

U.S. Cl. 178—5.4 CD **6 Claims**



A flying-spot scanner system for light scanning a plurality of film or slide images simultaneously to produce electric signals corresponding to the images and employing a single cathode ray tube forming a plurality of separate rasters on its screen as flying-spot light sources. An optical lens device common to the plural rasters is provided to project images of the rasters on the respective film or slide images, so that the flying-spot scanning is performed with accurate synchronization between the plural images.

3,798,356

SATURATION CONTROL CIRCUIT

Sachinori Furuya, Ibaragi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 21, 1972, Ser. No. 273,715

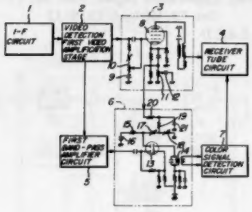
Claims priority, application Japan, Sept. 16, 1971, 46-72816

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 AC **6 Claims**

A saturation control circuit for color television receivers and the like which uses a multi-gate field-effect transistor serving as an amplifying element in a band-pass amplifier circuit, an amplifier section being constituted by a first gate, source

and drain of the multi-gate field-effect transistor, and in which a voltage varying in response to an adjustment of brightness or contrast is supplied to a second gate of the multi-gate field-effect transistor, whereby the amplification factor of the aforesaid amplifier section is automatically changed in response to the brightness or contrast control for automatic saturation control.



3,798,357

MAGNETIC RECORDING AND REPRODUCING SYSTEM

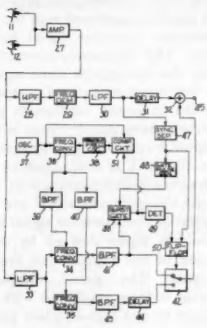
Hisaaki Narahara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1972, Ser. No. 310,863

Claims priority, application Japan, Nov. 30, 1971, 46-96504

Int. Cl. H04n *5/78, 9/32*

U.S. Cl. 178—5.4 CD **8 Claims**



In a system in which at least the chrominance components of composite color television signals are recorded during alternate line intervals and omitted during the remaining line intervals to form a checkerboard array on the recording medium and are recreated by combining reproduced chrominance components with delayed replicas, additional phase inversion circuits are provided to recreate PAL signals. The red color difference components of PAL composite signals are modulated on the color subcarrier in one phase on alternate lines and the opposite phase during the remaining lines. The inversion circuits include circuits for generating two conversion frequencies of such values that one of them reconverts alternate line intervals to have one phase condition and the other reconverts the remaining line intervals to have the opposite phase condition, thus recreating a PAL signal.

3,798,358

FACSIMILE TRANSMISSION SYSTEM

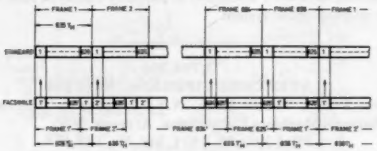
Norbert Adolf Mayer, Unertlstrasse 25, and Gerhard Moll, Unertlstrasse 24, both of 8000 Munich 23, Germany

Filed Apr. 25, 1972, Ser. No. 247,437

Claims priority, application Germany, Apr. 27, 1971, 2120515

Int. Cl. H04n *5/04*

U.S. Cl. 178—5.6 **14 Claims**



The invention describes a facsimile transmission system which allows facsimile pictures to be additionally transmitted in the field-blanking intervals over a normal transmission path for television signals. The mechanical relative movement between facsimile scanner and subject copy, which has been common in facsimile so far, is replaced by a selective electronic slippage between the facsimile frame produced with normal frame pickup units and the frame in whose field-blanking intervals the facsimile picture is to be transmitted line by line. Through the easily controllable slippage, sequential lines of the facsimile picture are transmitted in sequential field-blanking intervals, so that at the receiving end of the transmission path the facsimile frame can be reproduced without any special problems of synchronizing mechanical movements having to be solved.

3,798,359

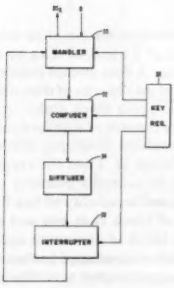
BLOCK CIPHER CRYPTOGRAPHIC SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,360

Int. Cl. H04l *9/00*

U.S. Cl. 178—22 **13 Claims**



A cryptographic system for encrypting a block of binary data under the control of a key consisting of a set of binary symbols. The cryptographic system is utilized within a data processing environment to ensure complete privacy of data and information that is stored or processed within a computing system. All authorized subscribers who are permitted access to data within the network are assigned a unique key consisting of a combination of binary symbols. The central processing unit within the computing network contains a complete listing of all distributed authorized subscriber keys. All communications transmitted from terminal input are encrypted into a block cipher by use of the cryptographic system operating under the control of the subscriber key

which is inputed to the terminal device. At the receiving station or central processing unit, an identical subscriber key which is obtained from internal tables stored within the computing system is used to decipher all received ciphered communications.

The cryptographic system develops a product cipher which is a combination of linear and nonlinear transformations of the clear message, the transformation being a function of the binary values that appear in the subscriber key. In addition to the transformation, the key controls various register substitutions and modulo-2 additions of partially ciphered data within the cryptographic system.

3,798,360

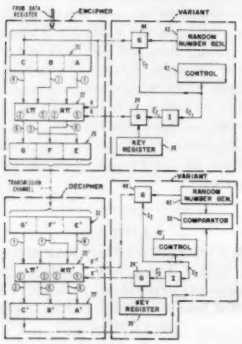
STEP CODE CIPHERING SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,174

Int. Cl. H04l 9/02

U.S. Cl. 178—22 **7 Claims**



This specification discloses a system that provides multiple level encipherment of a block of data by means of a stepped block cipher process. A data stream consisting of digital information is segmented into blocks of dimension D, each block is enciphered by means of a block cipher cryptographic system operating under the control of a unique subscriber digital key. The cryptographic system develops a first cipher text of equal dimension as the block D. Then the cryptographic system is effectively shifted to accept a plurality of data bits from a second data block and a plurality of bits from the first cipher. The combination of block data bits and ciphertext data bits forms a composite block of dimension equal to the data block D. This combination is introduced to the cryptographic device for developing a second cipher text. The combined output of the second ciphertext and those information symbols from the first ciphertext which were not reintroduced to the cryptographic device are transmitted as a complete unit to a receiving station which will decipher the received multiple level cryptogram by an inverse process.

The multiple level encipherment process is also utilized in a variant key embodiment which would encipher a data block D into a cipher C which is a function of a key control block consisting of a random combination binary digits that are continuously changing.

In a further embodiment which utilizes multiple level encipherment, there is presented a method for providing secrecy in communications between a central processing unit and its data banks.

3,798,361

MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM

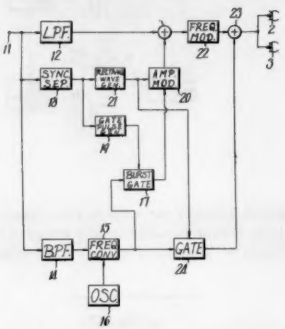
Hisaaki Narahara; Toshihiko Numakura, both of Tokyo, and Yoshimi Watanabe, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,655

Claims priority, application Japan, Nov. 26, 1971, 46-95500

Int. Cl. H04n 5/78, 9/32

U.S. Cl. 178—5.4 CD **10 Claims**



An improved system for magnetic recording and/or reproducing a color television signal including a luminance signal and a chrominance signal which contains a burst signal therein. Before recording the television signal, the chrominance signal is frequency-converted to a frequency band lower than its original one and the burst signal is extracted from the chrominance signal. The burst signal is then amplitude modulated by a rectangular waveform signal, derived from the horizontal synchronization signal, whose frequency is equal to two scanning line periods. The amplitude modulated burst signal is combined with the luminance signal to frequency-modulate a carrier signal having a predetermined frequency. The frequency-converted chrominance signal is gated by the rectangular wave signal and recorded along with the frequency-modulated signal on a magnetic medium. When the magnetic medium is played back, the frequency-converted chrominance signal is frequency-reconverted to the original frequency band by means of a reference signal the phase of which is controlled by the burst signal reproduced by frequency-demodulation so that phase errors of the reproduced chrominance signal are diminished. The frequency-reconverted chrominance signal is then gated by a rectangular waveform signal derived by detecting the amplitude modulation of the reproduced, frequency demodulated burst signal. The gated, frequency-reconverted chrominance signal is then combined with a portion of the same signal delayed by one scanning line period to produce a continuous chrominance signal.

3,798,362

AUTOMATIC SHUT-OFF DEVICE

Teruo Saito; Susumu Ide; Tooru Yasuda, all of Osaka, and Shigeru Enomoto, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 24, 1972, Ser. No. 256,293

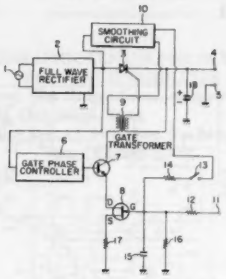
Claims priority, application Japan, May 31, 1971, 46-37946; May 27, 1971, 46-36862; May 29, 1971, 46-37364

Int. Cl. H04n 5/44

U.S. Cl. 178—5.8 R **10 Claims**

In a television receiver, the rectified power input is applied to the receiver by way of a control device having a control terminal. A phase controlling circuit responsive to the output of the rectifier applies a control signal to the control terminal for stabilizing the voltage applied by way of the control device to

the receiver. Circuit means responsive to the reception of signals by the receiver are connected to control the application of the control signals to the control terminal, so that in the



absence of received signals, the control signal is not applied to the control device. A time delay circuit is provided to enable energization of the circuit for a predetermined time following the cessation of the reception of signals by the receiver.

3,798,363

COLOR SELECTION CIRCUIT FOR VISUAL DISPLAY UNIT

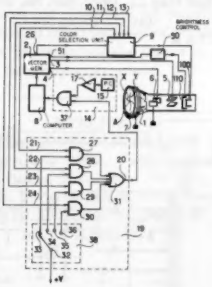
Gerard Melchior, Paris, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed June 8, 1972, Ser. No. 261,109

Claims priority, application France, June 8, 1971, 71.20689

Int. Cl. H04m *7/18*

U.S. Cl. 178—6 **8 Claims**



In a visual display unit including a color cathode ray tube, a vector generator for controlling the tracing of vectors on the cathode ray tube, a color control unit for changing the color of the trace by varying the voltage applied to the tube and a light pen to be placed in proximity to the screen of the tube for detecting the vectors traced on the tube, a color selection circuit is provided including a switching arrangement for actuating the light pen only in connection with control by said color control unit to produce a trace of a selected color.

3,798,364

VIDEO SIGNAL REPRODUCING SYSTEM

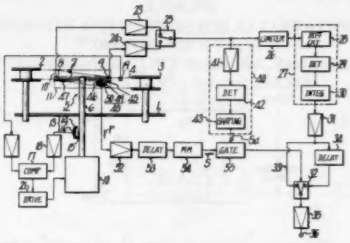
Hiroyuki Hayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 7, 1971, Ser. No. 205,529

Claims priority, application Japan, Dec. 11, 1970, 45-110879

Int. Cl. H04n *5/21, 5/78*

U.S. Cl. 178—6.6 DC **3 Claims**



In a reproducing system for a video signal recorded on a magnetic medium, which is provided with a dropout compensator for compensating a dropout in the reproduced video signal, the dropout compensator including a gate means which is operative to prevent dropout compensation in the case of a dropout occurring in the vicinity of the vertical synchronizing signal.

3,798,365

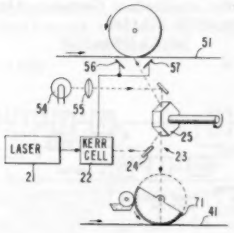
RECORDING METHOD AND APPARATUS UTILIZING LIGHT ENERGY TO MOVE RECORD FORMING MATERIAL ONTO A RECORD MEDIUM

Iben Browning, 1052 Pomeroy Ave., Santa Clara, Calif., and Peter R. Johnson, 41 Beverly Ter., Mill Valley, Calif.

Filed July 14, 1969, Ser. No. 841,435

Int. Cl. G03g *15/04*

U.S. Cl. 178—6.6 A **2 Claims**



A recording method and apparatus useful for a photocopy device are disclosed utilizing light energy to move a record forming material onto a record medium. Light energy, particularly from a laser, is focused to minute size and scanned across a member supporting a record forming material. The intensity of the light beam is modulated with information between a level at which said record forming material remains on the support member and a level at which the record forming material is caused to move from the support member to a record medium. A lens mosaic can be used to concentrate the light beam at minute cavities on the support member for containing the record forming material, and this support member can take the form of a screen or a member integral with the lens mosaic having cavities therein. The lens mosaic can be in the form of a semi-cylindrical surface, and a plurality of record forming material support members can be used, each

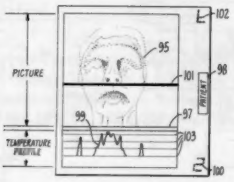
member supporting a material of a different color for producing a color copy.

3,798,366

INFRARED IMAGING SYSTEM

Robert P. Hunt, 331 Concord Dr., Menlo Park, Calif., and Richard H. Winkler, 4051 Scripps Ave., Palo Alto, Calif.

Filed Mar. 6, 1972, Ser. No. 232,015
Int. Cl. H04n *3/08, 5/22, 7/18*
U.S. Cl. 178—6.8 **15 Claims**



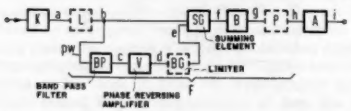
A pair of scanning mirror systems scans an object image in two dimensions over an infrared detector. The detector signal and signals proportional to the position of the mirror systems permit display of an image of the object on a video monitor. The video monitor display includes a portion thereof which is an image of the object and another portion thereof which is a temperature profile curve of the infrared intensity across one line of the image. A memory is optionally employed to store a frame of video information and to replay it at a much faster rate than it is scanned in order to form a persistent image on the video monitor. Automatic brightness control circuitry adjusts the displayed signal level according to the maximum temperature of the object being imaged.

3,798,367

APPARATUS FOR ELIMINATION OF INTERFERENCE FROM VIDEO SIGNALS

Adolf Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 14, 1971, Ser. No. 189,318
Claims priority, application Germany, Oct. 23, 1970, 2052290; Jan. 26, 1971, 2103585
Int. Cl. H04n *5/21*
U.S. Cl. 178—7.2 **10 Claims**



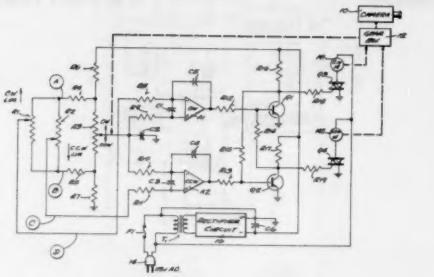
Apparatus is described for eliminating interferences in the video signals in video telephony or in other applications where the image receiving tube at the transmitter has a short storage time. A filter circuit is described for accomplishing the elimination of such interference, and this filter circuit is preferably placed at the transmission end of the video telephone circuit. The filter basically comprises a series arrangement of a logarithmic amplifier, a band elimination filter tuned to double the power frequency, a limiter and a potentiometer. The video signal is clamped to the black level prior to being coupled to the aforementioned filter arrangement. After the signal has been so filtered, the necessary picture gating, line gating and synchronizing signals may be added, as necessary. Other arrangements are described in which the interference frequency is branched off from the main circuit to be mixed with the disturbed video signal. This branching may be accomplished either electrically or optically.

3,798,368

PANNING CIRCUIT FOR SURVEILLANCE CAMERA

Gerald E. Kardach, South Milwaukee, and Robert E. Treleven, Milwaukee, both of Wis., assignors to Videosonics, Inc., Milwaukee, Wis.

Filed Sept. 25, 1972, Ser. No. 291,877
Int. Cl. H04n *5/24*
U.S. Cl. 178—7.2 **13 Claims**



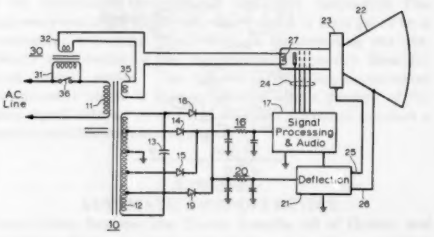
A surveillance camera is panned back and forth by electric motor means between predetermined clockwise and counterclockwise limits of rotation. The limits of rotation are established by two adjustable reference voltage levels, one of which represents the clockwise limit and the other of which represents the counterclockwise limit. A feedback voltage is generated representing the rotary position of the surveillance camera. When the feedback voltage equals either of the reference voltages, a switching circuit is activated to reverse the camera's direction of rotation. This automatically pans the camera back and forth between the clockwise and counterclockwise limits of rotation established by the reference voltages.

3,798,369

INSTANT PLAY TELEVISION RECEIVER WITH CONSTANT VOLTAGE TRANSFORMER

Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 22, 1972, Ser. No. 255,350
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.5 R **7 Claims**



A solid state television receiver incorporates a voltage regulating transformer having a filament winding supplying substantially constant operating voltage to the picture tube filament for prolonging picture tube life. Instant play operation is achieved by providing a filament transformer having a high impedance primary winding, connectable in series with the input of the regulating transformer, and a secondary winding connected in series with the regulating transformer filament winding. The single pole, single throw on-off switch of the receiver is connected across the primary winding of the fila-

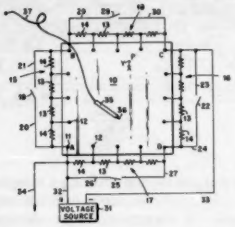
ment transformer. When the switch is open, the regulating transformer input and the primary of the filament transformer are in series with substantially reduces the voltage across the regulating transformer primary and drops the secondary voltages below operating levels for the television receiver. The filament transformer secondary winding supplies the tube filament with reduced power during standby operation.

3,798,370

ELECTROGRAPHIC SENSOR FOR DETERMINING PLANAR COORDINATES

George S. Hurst, Oak Ridge, Tenn., assignor to Elographics, Incorporated, Oak Ridge, Tenn.

Filed Apr. 17, 1972, Ser. No. 244,629
Int. Cl. G08c 21/00
U.S. Cl. 178—18 **16 Claims**



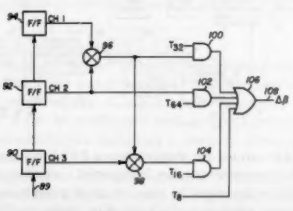
An electrographic sensor for determining planar coordinates with good resolution, e.g., about 0.1 mm, and an overall accuracy of about 0.4 mm. A rectangular single sheet of extremely uniform resistive material has a row of small electrodes arranged along each edge with discrete resistors connected between adjacent electrodes of each row so as to form resistor networks along each edge of the resistive sheet. A switching circuit applies a voltage across the resistive sheet by applying one polarity to both ends of the resistor network of one edge and the opposite polarity to both ends of the resistor network at an opposite edge. At a desired time interval, voltage is switched to the second set of resistor networks so as to produce orthogonal electric fields in the resistive material during mutually exclusive time intervals. The sensor is contacted with probe at selected points to produce voltage signals which are proportional to the coordinates of any such points. Specific embodiments are described for punched-card reading, the preprogrammed interpretation of graphical data, and the movement of a probe across the sensor to produce continuous contacting for many applications.

3,798,371

DATA MODEM APPARATUS

William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Division of Ser. No. 187,675, Oct. 8, 1971. This application May 16, 1973, Ser. No. 360,709
Int. Cl. H04l 27/24
U.S. Cl. 178—67 **1 Claim**



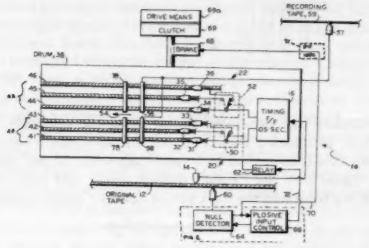
Apparatus for and the method of providing three channel, eight phase data modulation and demodulation whereby the system may be used for either two or three channels with no detrimental effects in either mode of operation due to the additional circuitry. The invention discloses additional apparatus for connection to a conventional two channel, four phase system to produce a three channel, eight phase system. The coding of the eight phase system modifies the basic phase change of a two channel, four phase system by ±22.5° depending upon the inclusive OR result of the first two channels as compared to the binary logic level of the third channel.

3,798,372

APPARATUS AND METHOD FOR RETARDATION OF RECORDED SPEECH

David Thurston Griggs, 5128 S. Rolling Rd., Baltimore, Md.

Filed May 12, 1972, Ser. No. 252,568
Int. Cl. G10l 1/16
U.S. Cl. 179—1 SA **3 Claims**



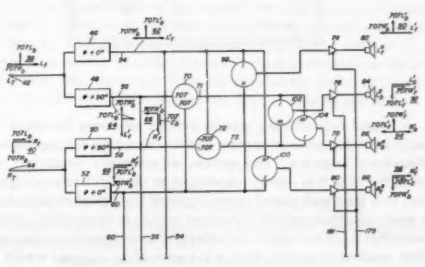
A method and system for translating or processing recorded speech to a slower rate of speech while retaining its original frequency values, with interposition of compensations which include intensification of "plosive" and other sounds which follow silences or breaks in the stream of speech.

3,798,373

APPARATUS FOR REPRODUCING QUADRAPHONIC SOUND

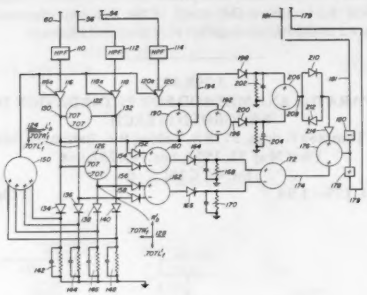
Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 23, 1971, Ser. No. 155,976
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ **25 Claims**



Apparatus for decoding four separate channels of information transduced from a medium having only two separate tracks and presenting it on four loudspeakers to give the listener the illusion of sound coming from a corresponding number of separate sources. The realism is enhanced by a decoding system which accepts the two outputs from the medium, which may be a stereophonic disc record, separates them into four independent channels each carrying predominantly the information contained in the four original recorded

sound signals, and, utilizing a wave-matching technique derives control signals for controlling the gains of amplifiers associated with the four loudspeakers. The control circuitry improves the separation of the four independent channels,



particularly the generally "front" from the generally "back" signals. In another aspect of the encoder, the front-to-back separation is improved by intermixing some of the "left" output signal into the "right" output signal, and vice versa, at both the front and the back sets of decoder output terminals.

3,798,374

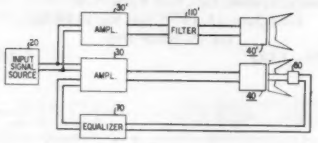
SOUND REPRODUCING SYSTEM UTILIZING MOTIONAL FEEDBACK

Stanley Thayer Meyers, Red Bank, N.J., assignor to Rene Oliveras, Madison, N.J., a part interest

Filed Apr. 3, 1972, Ser. No. 240,495

Int. Cl. H04r *3/04*

U.S. Cl. 179—1 F **16 Claims**



A sound reproducing system utilizes motional feedback to reduce loudspeaker distortion and to extend the loudspeaker's frequency response. The system substantially comprises an amplifier which is jointly responsive to the input source signal and to a feedback signal, a moving-coil loudspeaker including a main electromagnetic structure which is responsive to the amplifier's output signal for effecting axial speaker-cone motion, motional sensing means for providing a signal which is functionally related to axial cone velocity, and an equalizer exhibiting a predetermined nonlinear attenuation versus frequency characteristic and which is responsive to the motional signal for providing the feedback signal. The feedback signal is degeneratively applied to the amplifier which, in turn, forces the loudspeaker to respond linearly to the input source signal and thereby provide a uniform sound energy output. It is a feature of the present invention that the loudspeaker cone exhibits a substantially constant acceleration at low frequencies and a substantially constant velocity at higher frequencies.

3,798,375

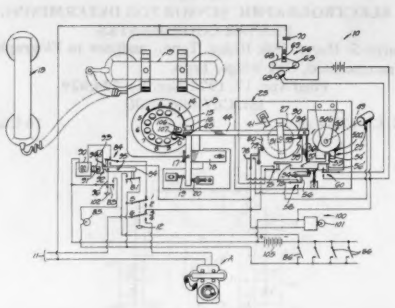
SILENT ALARM SYSTEM AND MEANS FOR DIRECTING AIRBORNE PERSONNEL TO EMERGENCY SITE

Gaston A. Delisle, 15935 Skytop Rd., Encino, Calif.

Continuation-in-part of Ser. No. 170,587, Aug. 10, 1971, which is a continuation-in-part of Ser. No. 849,073, Aug. 11, 1969. This application July 12, 1972, Ser. No. 271,171

Int. Cl. H04m *11/04*

U.S. Cl. 179—2 R **18 Claims**



An emergency alarm system utilizing a telephone system to relay pertinent information to public officials including the address and a pair of direction finder vectors from local direction finger range stations which sectors intersect at the point of emergency and useful to airborne emergency personnel in proceeding to the site. The alarm includes a plurality of sensors any one of which is effective to activate a cycling mechanism to signal the phone system operator to connect local officials and silently relay the emergency information for a period of time following which the components are automatically conditioned for the next operating cycle. The alarm includes a blinking beacon located exteriorly of the premises to pinpoint the premises to airborne personnel.

3,798,376

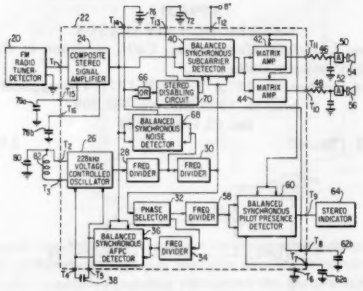
MULTIPLEX DECODING SYSTEM

Allen Leroy Limberg, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 888,308, Dec. 29, 1969. This application Jan. 18, 1972, Ser. No. 218,786

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **34 Claims**



A decoder circuit for stereophonic FM broadcast receivers adapted for construction by integrated circuit techniques. A local oscillator arranged to operate at an even harmonic of the 19 KHz stereo pilot signal is locked in phase and frequency to the pilot signal by means of an automatic frequency and phase control (AFPC) loop. The AFPC loop includes frequency

dividing means coupled to the oscillator output and balanced synchronous detection means coupled to the output of the frequency dividing means and to a source of composite stereophonic signals (including the pilot signal) for producing oscillator control signals. Additional synchronous detection means are coupled to the source of composite signals and to further frequency dividing means for producing indications of pilot signal presence and above-band noise and for demodulating the difference channel (L−R) information. Matrixing and sterophonic-monophonic switching means are also incorporated in the decoder system.

3,798,377

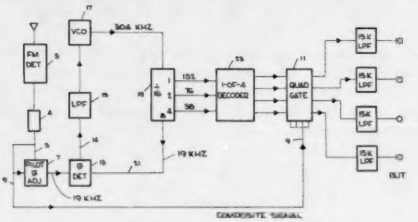
FOUR CHANNEL FM DECODER UTILIZING A ONE-OF-FOUR DECODER

Louis Dorren, Milbrae, Calif., assignor to Matsushita Electric Corporation of America, New York, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,073

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **3 Claims**



A four channel FM system decoder wherein the usual 19 kHz pilot signal actuates a phase lock loop circuit, said phase lock loop circuit actuating a one-of-four decoder and quadraplex gate to switch an FM composite signal containing four information elements to extract each of the elements separately.

3,798,378

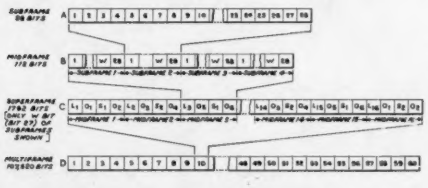
FRAME SYNCHRONIZATION SYSTEM

Marvin A. Epstein, Monsey, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 7, 1972, Ser. No. 304,435

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **24 Claims**



There is disclosed herein a frame synchronization system for a binary data TDM signal including a multiframe having X superframes, each of the X superframes including M midframes, each of the M midframes including m subframes, and each of the m subframes including x ports or channel times. The data signal includes an overhead channel having overhead data including a first sync signal having a first predetermined pattern composed of Y bits disposed in adjacent ones of the M midframes and a second sync signal having a second predetermined pattern different than the first predetermined pattern composed of M bits, each of the M bits being disposed in a different one of the M midframes, where X, M, m, x and Y are all integers greater than one. The data bit rate clock is extracted from the data signal and applied to a cascade connection of a port counter, a subframe counter, a midframe counter and a superframe counter which together with decoding and gating logic associated with each of the above-mentioned counters produces local timing signals including a first reference signal for the first sync signal of the data signal and a second reference signal for the second sync signal of the data signal. In response to one of the local timing signals, such as the overhead channel port timing signal, the overhead data is demultiplexed from the data signal. A first comparator compares the first reference signal to the bits of the data signal to produce a first output signal indicating matches and mismatches between the first reference signal and the data bits. A second comparator circuit compares the overhead bits with the second reference signal and produces a second output signal indicative of the matches and mismatches therebetween. A decision circuit including a digital integrator in the form of an up-down counter and threshold detectors produce a first control signal when the output signal of the counter is equal to or less than a predetermined lower threshold level and a second control signal is produced when the output of the counter is equal to or greater than a predetermined upper threshold level. A mode control capable of producing signals indicative of three different modes of operation is coupled to the threshold detectors and responds to both of the control signals. Gates are coupled between the first and second comparators and the decision counter which under control of the mode control circuit output signal representing a first mode couples the first output signal to the decision counter and under control of the mode control circuit output signal representing a second mode couples the second output signal to the decision counter. The second reference signal is produced by the states of the stages of the superframe counter and in a third mode between the first and second modes mentioned hereinabove the overhead data, under control of the mode control circuit output signal representing the third mode, is coupled to the stages of the superframe counter to provide an assumed error free second reference signal. During the first mode of operation the first output signal is coupled to the decision counter and when the first control signal is below or equal to the lower threshold level and there is a mismatch indicated in the first output signal a gate disposed between the bit clock and the port counter is operated to block the application of the bit clock to the port counter to cause a shift in the phase of the local timing signals to establish and maintain synchronization to midframes of the received data signal. In the second mode of operation if the proper phase of the second sync signal is detected synchronization of the superframe and hence the multiframe is established and maintained. If the proper phase of the second sync signal is not detected, the mode control circuit will cause the framing circuit to revert to the first mode of operation and start the framing operation cycle again to properly establish and maintain the desired synchronization.

3,798,379

CONNECTOR TERMINAL DIAL REPULSER

Dell Royce Brooks, Ballinger, Tex., assignor to Telephone Industries, Inc., Ballinger, Tex.

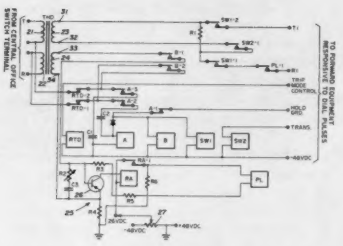
Filed Sept. 22, 1971, Ser. No. 182,890

Int. Cl. H04q *1/32*

U.S. Cl. 179—16 E **4 Claims**

A trunk circuit interface between a connector terminal of a conventional telephone switching system and a plurality of dial access stations forward of the connector terminal. A conventional repeating coil and a plurality of relays respond to ringing on the connector terminal by providing a ring-trip loop closure and a path for receiving further dial pulses. Dial pulses actuate the relays to provide loop pulsing to the forward equipment. When enough pulses have been received to select a particular station in the forward equipment, ground is pro-

vided back to the circuitry of the invention to inhibit further pulses and close a tip and ring transmission path between the



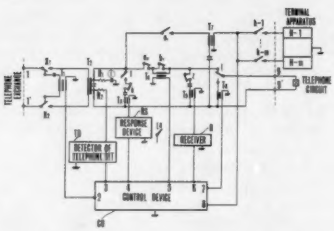
output of the connector terminal and the selected station within the forward equipment.

3,798,380

TELEPHONE APPARATUS

Yoshimitu Hoshi, Tokyo; Takeshi Wakabayashi, Sagamihara, and Saburo Uchida, Tokyo, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed May 6, 1971, Ser. No. 140,694
Claims priority, application Japan, May 9, 1970, 45-39102
Int. Cl. H04m *3/42, 1/64*
U.S. Cl. 179—18 B **7 Claims**



In telephone apparatus there are provided a telephone set; terminal apparatus; means for receiving a push button dialing signal for selecting the telephone set; a response device having a recording tape containing a first information block in which the dial number of the called party, the dial number of the terminal apparatus and the information regarding thereto are recorded, and a second block in which a signal representing the absence of the called party is recorded; and a control device. The response device is operated by a received signal and returns to its original state when the information reproduced in the first block is transmitted to the calling party and thereafter the telephone set or the terminal apparatus is seized by the dialing signal.

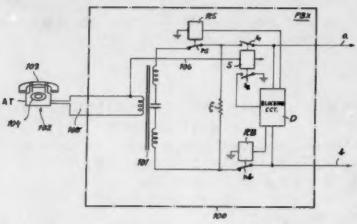
3,798,381

INHIBITING TRUNK CALLS FROM PRIVATE BRANCH EXCHANGES

Luigi Piacente, and Giovanni Gandolfi, both of Milan, Italy, assignors to Societa' Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Nov. 8, 1971, Ser. No. 196,318
Claims priority, application Italy, Nov. 9, 1970, 31483/70
Int. Cl. H04m *1/66*
U.S. Cl. 179—18 DA **12 Claims**

To prevent the unauthorized initiation of toll calls from a local telephone station served by a private branch exchange (PBX), the latter is equipped with monitoring circuitry working into a binary/decimal counter which is activated during the dialing of an initial digit (or combination of digits) and, in response to one or more predetermined values thereof, trips a flip-flop to disconnect the station from the line. The flip-flop is also tripped if dialing is commenced before reception of a dial



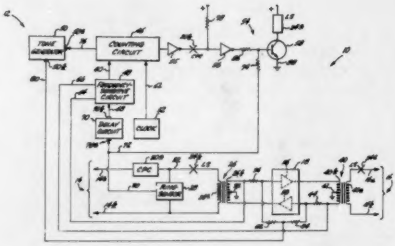
tone from the central office, or if dialing is continued after the arrival of a second a-c signal (line free or busy) from that office. To forestall the generation of a spurious dial tone by voice frequencies. the a-c path from the local station to the PBX is opened during dialing.

3,798,382

VOICE-MONITORING CONTROL CIRCUIT

El Don L. Hoven, Lake Oswego, Oreg., assignor to Ford Industries, Inc., Portland, Oreg.

Filed May 22, 1972, Ser. No. 255,730
Int. Cl. H04m *1/00*
U.S. Cl. 179—81 R **5 Claims**



A circuit for assuring automatic breaking of a talking connection in a telephone line a preselected time interval after talking has ceased on the line. The circuit has particular ultility in connection with apparatus such as a call diverter, or a telephone answering and message-recording device. The circuit includes a digital-type counting circuit which is fed pulses to be counted, and which effects breaking of a talking connection on reaching a certain count. A frequency-sensitive circuit responsive to a limited range of voice frequencies (found to recur frequently in normal male and female conversation) monitors voice frequencies on the line, and on sensing a frequency within such range, effects resetting of the counting circuit to a zero-count condition to prevent breaking of a talking connection.

3,798,383

RINGING DEVICE FOR AN ELECTRICAL TELEPHONE

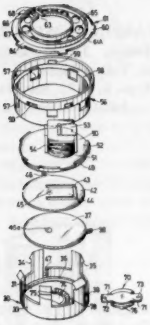
Horst Brandstatter, Zirndorf, Germany, assignor to Georg Brandstatter, Zirndorf, Germany

Filed Feb. 4, 1972, Ser. No. 223,551

Claims priority, application Germany, Feb. 5, 1971, G 71 04 305.5; Nov. 29, 1971, P 21 59 003.4

Int. Cl. H04q 9/00

U.S. Cl. 179—84 R 9 Claims



A telephone such as a toy telephone is provided with a ringing device in the form of the earpiece of the handset of the telephone.

3,798,384

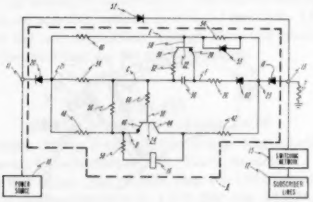
RING TRIP CIRCUIT

William E. Shaffer, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,390

Int. Cl. H04m 3/02

U.S. Cl. 179—84 R 9 Claims



A ring trip circuit for telephone systems for supplying ringing signals and DC potentials to a called party and for detecting when a called party goes off hook. The ring trip circuit includes two unidirectional conducting paths, wherein each path conducts during opposite polarities of alternating current ringing signals. At least one of the unidirectional current paths includes a circuit for detecting when the called subscriber goes off hook.

3,798,385

MAGNETIC RECORDING AND REPRODUCING DEVICE WITH SPEAKER CUT OFF WHEN DRIVING SYSTEM IS STOPPED

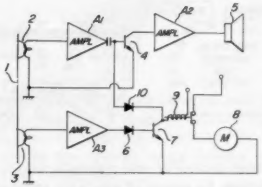
Kazunori Saito; Toshio Tsubaki; Shoichi Ito, and Sadaaki Fujiyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,591

Claims priority, application Japan, Nov. 9, 1970, 45-97872; Nov. 9, 1970, 45-97897

Int. Cl. G11b 23/30, 27/30, 31/00

U.S. Cl. 179—100.2 S 3 Claims



A magnetic recording and reproducing device used primarily with an educational slide projector with a built-in tape recorder, wherein an erroneous operation of a synchronizing system and generation of a discordant sound caused by continued feed of magnetic tape due to the inertia of a driving system including a motor is prevented when releasing the magnetic tape driving elements by a stop signal picked out to temporarily stop the reproduction of a sound recorded on the magnetic tape.

3,798,386

METHOD OF RECORDING A MODULATED CARRIER FOR RADIATION REPRODUCTION

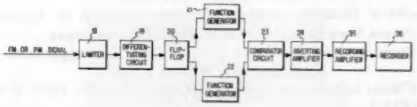
Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Division of Ser. No. 5,341, Jan. 23, 1970. This application Sept. 13, 1971, Ser. No. 179,990

Claims priority, application Germany, Jan. 23, 1969, P 19 03 822.3

Int. Cl. G11b 11/18

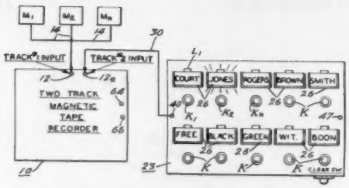
U.S. Cl. 179—100.4 M 4 Claims



A method and apparatus for reproducing signals stored on a carrier in the form of undulations corresponding to the signals, the undulations generally being formed is a spiral groove. The undulations on the carrier are moved past a suitable radiation source, such as a light source, and the density of the radiation emanating from the undulations, which is a function of the curvature of the undulation, is detected by a suitable radiation detecting means after it passes through a suitable slit aperture arranged at a predetermined distance from the carrier surface, so that variations in the density are a function of the undulations. The undulations may be either frequency or phase modulated with respect to the signal and their amplitude can be modified as a function of their recorded wavelength in such a manner that the curved surface portions of the undulations have nearly the same focal length for all occurring wavelengths. The carrier can have at least one recording surface in which is formed a groove having a trapezoidal cross

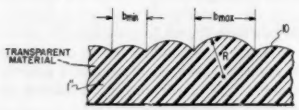
section and having its bottom surface provided with the undulations.

3,798,387
RECORDING SYSTEM FOR JUDICIAL PROCEEDINGS
Bernard J. Gallagher, Jr., 332 Oxford Rd., Morristown, Pa.
Filed Oct. 4, 1971, Ser. No. 186,165
Int. Cl. G11b *23/18, 23/36, 27/30*
U.S. Cl. 179—100.2 MD **7 Claims**



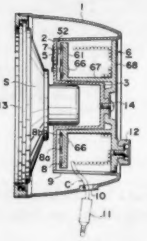
An electronic recording and playback aid for use in stenographic reporting, by means of which the speakers' voices are recorded and later played back to prepare a typewritten transcript of their words. Identification of which speaker is speaking at a given time is enabled by a unit associated with the recording apparatus and having a key for each speaker, the court reporter or attendant operating the appropriate corresponding key when a given speaker is speaking. Operation of the key applies a particular frequency of signal to a channel or track separate from that in which the speech is recorded, the frequency or tone continuing throughout the speech by that speaker, until a different key for a different speaker is operated. A light associated with each key is also automatically turned on when that key is operated, so that the operator can assure himself that the proper key is operated. When the recording is later played back, the particular speaker's identification signal is automatically detected and used to turn on the light associated with the corresponding speaker's key, while the speaker's words are also being played back. This enables the operator on playback to start at any point on the tape with the speaker automatically identified by the light associated with his key, and without any interference with the sound of the recorded words.

3,798,388
RECORD CARRIER FOR STORING ANGULARLY MODULATED SIGNALS
Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany
Division of Ser. No. 5,341, Jan. 23, 1970. This application Sept. 13, 1971, Ser. No. 179,991
Claims priority, application Germany, Jan. 23, 1969, P 19 03 822.3
Int. Cl. G11b *23/00, 11/18, 25/04*
U.S. Cl. 179—100.4 R **8 Claims**



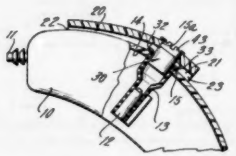
A method and apparatus for reproducing signals stored on a carrier in the form of undulations corresponding to the signals, the undulations generally being formed in a spiral groove. The undulations on the carrier are moved past a suitable radiation source, such as a light source, and the density of the radiation emanating from the undulations, which is a function of the curvature of the undulation, is detected by a suitable radiation detector after it passes through a suitable slit aperture arranged at a predetermined distance from the carrier surface, so that variations in the density are a function of the undulations. The undulations may be either frequency or phase modulated with respect to the signal and their amplitude can be modified as a function of their recorded wavelength in such a maner that the curved surface portions of the undulations have nearly the same focal length for all occurring wavelengths. The carrier can have at least one recording surface in which is formed a groove having a trapezoidal cross section and having its bottom surface provided with the undulations.

3,798,389
EARPHONE WITH REEL
Teru Tokizaki, Tokyo, Japan, assignor to Eko Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 8, 1972, Ser. No. 287,261
Int. Cl. H04m *1/15*
U.S. Cl. 179—101 **3 Claims**



A headphone having a reel for the internal storage of the cord.

3,798,390
HEARING AID WITH VALVED DUAL PORTS
Franklin A. Gage, Croton, and Richard P. Muttick, Yorktown Heights, both of N.Y., assignors to Gould Inc., Chicago, Ill.
Filed July 24, 1972, Ser. No. 274,448
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD **10 Claims**

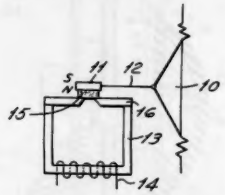


A hearing aid casing having a plurality of sound conducting passages, preferably a forwardly directed passage and a rearwardly directed passage, each communicating through a "mixer" valve to a microphone interiorly of said casing; the valve may be operated to close either passage leaving the other open or to reduce the effective cross-sectional input of one passage while leaving the other open. The valve may support a sound filter in the sound path to the microphone; the passages may each be provided with filter plugs.

3,798,391
MOVABLE MAGNET LOUDSPEAKER

Rollin James Parker, Greenville, Mich., assignor to General Electric Company, New York, N.Y.

Filed June 22, 1972, Ser. No. 265,250
Int. Cl. H04r *11/02*
U.S. Cl. 179—114 R **3 Claims**

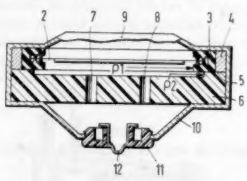


A transducer device such as a loudspeaker or microphone has the electrical coil stationary with respect to the acoustic diaphragm. The diaphragm is actuated by a movable permanent magnet which interacts with the field of the stationary electrical coil. The preferred permanent magnet is one having a high torque-to-weight ratio with respect to an external field. The cobalt-rare earth magnets are examples of such permanent magnets.

3,798,392
ELECTROACOUSTIC TRANSDUCER

Erwin Martin, Munich, and Franz Beil, Germering, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 18, 1972, Ser. No. 245,105
Claims priority, application Germany, Apr. 23, 1971, 2119911
Int. Cl. H04r *17/10*
U.S. Cl. 179—115.5 ES **6 Claims**



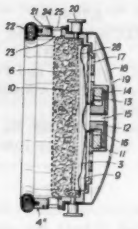
An electroacoustic transducer with a diaphragm strained to curvature and which is gripped at its edge regions with an elastic storage structure is described. The elastic storage structure adjoins an annular surface on at least one side. The inside diameter of the annular surface is larger than the inside diameter of the storage structure for the diaphragm.

3,798,393
HEADPHONE CONSTRUCTION

Rudolf Gorike, Wien, Austria, assignor to Akg Akustische u. Kino-Gerate Gesellschaft m.b.H., Wien, Austria

Continuation of Ser. No. 10,868, Feb. 12, 1970, abandoned. This application Mar. 3, 1972, Ser. No. 231,762
Claims priority, application Austria, Feb. 17, 1969, 1583 A/69; Jan. 12, 1970, 243 A/70
Int. Cl. H04r *1/10*
U.S. Cl. 179—182 R **8 Claims**

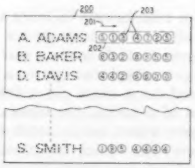
A headphone construction includes freely radiating sound converters whose diaphragms, when the earphones are attached, are not loaded by the impedance of the wearers' ear. The diaphragm of the electrostatic converter is primarily mass-inhibited and damped by acoustic or mechanical friction resistances. Supporting elements are provided between the head and the earpiece which provide minimum spacing distance between the diaphragm and the inlet of the ear which corresponds practically to the contact-free wearing of the sound converters. The supporting elements may advantageously comprise a pair of ring members which are concentrically arranged one within the other around the ear and which support the earphone at a spaced location from the ear. The rig members include openings which may be aligned and enlarged for varying the opening space defined between the diaphragm and the ear opening.

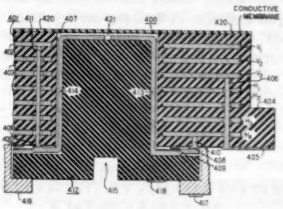


3,798,394
KEYBOARD SWITCH ASSEMBLY WITH CONDUCTIVE DIAPHRAGM OPERATORS AND ROTARY SWITCH OPERATORS FOR ADJUSTABLY SELECTING A MULTIDIGIT NUMBER

Rembert Ryan Stokes, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Oct. 11, 1972, Ser. No. 296,576
Int. Cl. H01h *13/66, 41/14*
U.S. Cl. 200—5 A **12 Claims**





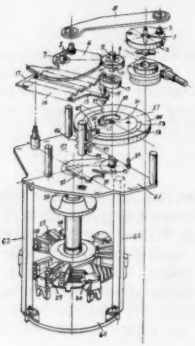
Different segments or bits of encoded information each of which is represented by signals produced by the connection of a plurality of conductors can be generated by a single encoding device which can be readily modified to interconnect different pluralities of conductors. Lands of conductive material are connected to respective ones of the conductors. A rotor having a plurality of wipers thereon is rotatably mounted with respect to the lands. The wipers simultaneously contact a different plurality of lands depending upon the angular orientation of the rotor with respect to the lands. The wipers are connected by a deformable membrane in response to an operating force thereby interconnecting a plurality of the conductors

and proucing signals representing one of the segments of information.

3,798,395
OPERATING MECHANISM FOR TAP CHANGER SWITCHES

Sivert Norman; Ernst Flytstrom, and Folke Johansson, all of Ludvika, Sweden, assignors to Almanna Svenslsa Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 6, 1972, Ser. No. 304,246
Int. Cl. H01h 3/00
U.S. Cl. 200—17 R 5 Claims



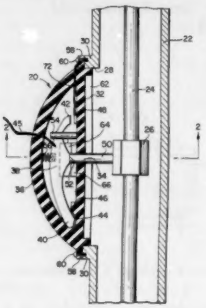
A tap changer for transformers includes a selector switch and a diverter switch. The drive device for the switch includes a gear segment which drives a gear wheel mounted on a shaft which gear wheel also carries a slewing bracket on which is pivoted on a pivot pin a link which is connected to one end of a spring, the other end of which is stationary. The gear wheel has a notch extending partly around its periphery, into which the pivot pin extends so that the gear wheel can turn freely through a limited distance without affecting the spring. On the same shaft is mounted a fly wheel which has an arcuate slot into which the pivot pin extends. A braking arrangement is provided which holds the fly wheel against movement until it is forceably turned by the pivot pin. The fly wheel carries a projection which engages in a Maltese cross arrangement for shifting the contacts of the diverter switch.

3,798,396
IGNITION POINT ASSEMBLY WITH GUIDE POSTS FOR MOVABLE CONTACT

Eugene H. Mann, 1240 10th Ave., North, Naples, Fla.

Filed Sept. 25, 1972, Ser. No. 292,249
Int. Cl. H01h 19/62
U.S. Cl. 200—30 A 11 Claims

This invention provides an easily replaceable ignition point assembly that is designed to be operated by the point cam of a conventional distributor of an internal combustion engine. The ignition point assembly comprises a base, a contact arm pivotally mounted on the base for movement toward and away from the base, a stationary contact located on the base for making and breaking electrical engagement with the contact arm, and actuator means projecting through an opening in the base for engaging the contact arm and a cam located on the opposite side of the base from the contact arm to pivot the contact arm into and out of electrical engagement with the stationary contact upon rotation of the cam. Guide posts on

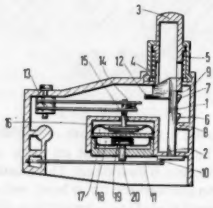


the base to engage the contact arm to limit its movement to a perpendicular path.

3,798,397
TIME DELAY SWITCH HAVING CONTACT RAM ACTUATOR AND ENERGY STORAGE MEANS

Albert Geese; Herbert Hoher, both of Munich, and Erwin Awakowicz, Bocholt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 10, 1972, Ser. No. 305,248
Claims priority, application Germany, Nov. 10, 1971, 2155916
Int. Cl. H01h 7/03, 43/28
U.S. Cl. 200—34 6 Claims



A short time switch for carrying out switching operations of limited duration is described. The switch is actuated by, for example, a pushbutton, but the remainder of the switching operation is carried out automatically. A contact spring arrangement is provided upon which are mounted the switch contacts, and a force-proportional retarding element, associated with the contact spring, which controls the return time of the control spring arrangement to its original or rest position. A ram, operated axially by the pushbutton has a shoulder which engages with a free end of one of the contact springs. A cam, mounted on the ram, during the axial travel of the ram, causes it to disengage from the pushbutton at a given point. At the point of disengagement, further movement of the ram is under the impetus of an energy storage element, such as a leaf spring, and independent from the pushbutton.

3,798,398

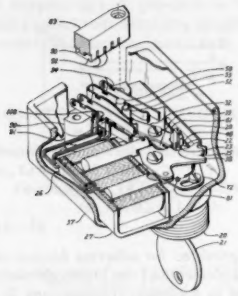
KEY-RECEIVING LOCK ASSEMBLIES AND APPARATUS INCORPORATING SUCH ASSEMBLIES

Austin Ariss Hills, 227 Hespeler Rd., R.R. 3, Galt, Ontario, Canada

Continuation-in-part of Ser. No. 240,996, April 4, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,709

Int. Cl. E05b *11/00*

U.S. Cl. 200—44 **44 Claims**



In a key-receiving lock assembly for controlling access to or use of leased apparatus, two remotely energized electromagnets may be operated alternately to engage and disengage a securing member relative to the operable elements of the lock, said securing member, when engaged, securing the key within the lock and securing the operable elements of the lock in a position preventing access to or use of the apparatus protected by the lock. A switch inhibits engagement of the securing member unless the key is in the lock and the lock is in the securing position. A second switch, closed by lock rotation to a position other than the securing position or the position in which the key is insertable into and removable from the lock, provides continuous operational access to the apparatus protected by the lock. A third switch provides transient energization of a circuit such as required for starting of an internal combustion engine. Disconnectable remote control means, with protective features, are included.

3,798,399

ANTI-INCENDIARY DEVICE FOR AUTOMOTIVE VEHICLES

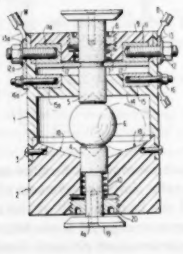
Joseph Corporandy, Clos Manou Bikini, 06 La Roquette Sur Siagne, France

Filed Aug. 25, 1972, Ser. No. 283,762

Claims priority, application France, Aug. 27, 1971, 71.32044; June 26, 1972, 72.24034

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.45 R **6 Claims**



An anti-incendiary device for preventing fires upon the collision of an automotive vehicle having an internal combustion engine with an ignition system, comprises a ball held between two vertical coaxial plastic pistons that are spring urged toward the ball. Upon collision, the inertia of the ball dislodges the ball from between the pistons and permits the pistons to move toward each other. One of the pistons carries an electrically conductive cross piece that forms a portion of the circuit between the battery and the ignition system of the engine when the ball separates the pistons, but which moves into a position to interrupt the ignition circuit and ground the ignition system when its associated piston moves toward the other piston. When dislodged, the ball rests on a conical seat and the lower of the two pistons may be withdrawn against the action of its spring to permit the ball to roll back to operative position for resetting.

3,798,400

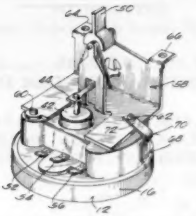
FULLY GROUNDED PRESSURE SWITCH

Irving Gebel, Oak Park, and Abed G. Kahale, Roselle, both of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Mar. 16, 1973, Ser. No. 341,911

Int. Cl. H01h *35/34, 9/12*

U.S. Cl. 200—83 R **1 Claim**



The pressure switch has a switch mounted in the plastic, electrically insulative case above the diaphragm. The perimeter of the diaphragm is captured between the plastic case and the cup which has a tubular connector for connection to a source of pressure to be sensed. The chamber below the diaphragm between the diaphragm and cup is the pressure chamber and pressure variations cause flexure of the diaphragm and operation of the switch. The rim of the cup is rolled over the case flange to hold the parts assembled. The mounting bracket is secured to the case and to the appliance (or other equipment) frame — which is electrical ground — and, therefore, satisfies more stringent electrical requirements. In order to ground the cup — even though it is electrically dead — one end of a conductive ground strap is captured between the case and the cup when the cup rim is rolled over the case flange. The other end overlies the bracket and is captured by a screw mounting the bracket to the case. The arrangement meets demanding electrical requirements at very low cost and without requiring added costy manufacturing operation.

3,798,401

LIQUID LEVEL RESPONSIVE SWITCH ASSEMBLY

Aloysius J. Kochanski, 27312 Spring Arbor Dr., Southfield, Mich., and Charles J. Hire, 6 Cranswick La., Rochester, N.Y.

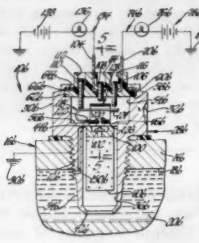
Filed Aug. 30, 1972, Ser. No. 284,910

Int. Cl. H01h *35/40*

U.S. Cl. 200—84 C **13 Claims**

An electrical switch assembly has a body or housing containing a moveable magnetic member and a float member carrying an armature; when the float member senses a reduction

of the liquid level below a predetermined minimum level, the float causes the armature to move thereby permitting the



moveable magnetic member to move and complete a related electrical circuit.

3,798,402

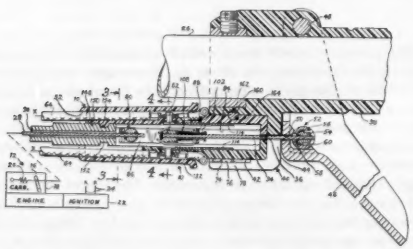
SAFETY SWITCH AND CONTROL SYSTEM FOR VEHICLES

Andrew F. Raab, 8908 Mango St., Morton Grove, Ill.

Filed Apr. 19, 1972, Ser. No. 245,406

Int. Cl. H01h *17/06*; **F02b** *77/08*; **H01h** *9/06*

U.S. Cl. 200—161 **22 Claims**



A throttle safety switch is connected into the throttle control cable for a snowmobile or other vehicle. When the normal tension in the throttle control cable is lost due to freezing or sticking of the throttle in the open position, the switch is actuated so as to short circuit or otherwise disable the ignition system for the engine on the snowmobile. The switch involves first and second movable members with relative lost motion therebetween. The tension in the control cable normally takes up the lost motion in one direction. When such tension is lost, the lost motion is taken up in the opposite direction by a spring acting between the members. As a result, a pair of contact arms on one of the members are moved outwardly by a camming element on the other member so that the arms engage stationary elongated contact elements connected to the ignition system, such elongated contact elements being engageable by the contact arms throughout the range of movement of the movable members.

3,798,403

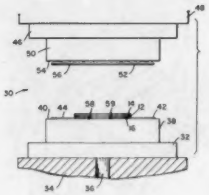
APPARATUS FOR ADHERING FRICTION MATERIAL TO RING-LIKE ELEMENT

David C. Mitchell, Bloomfield Hills, and Charles W. Latreille, Detroit, both of Mich., assignors to D.A.B. Industries, Inc., Detroit, Mich.

Division of Ser. No. 204,659, Dec. 6, 1971, Pat. No. 3,740,512. This application Jan. 22, 1973, Ser. No. 325,862

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.53 **1 Claim**



A method is provided for adhering friction material to a metallic ring-like element to form clutch elements of the type generally utilized in automatic transmissions. In a preferred embodiment, the ring-like element is precoated with an adhesive material on both sides. The adhesive is then dried to a non-tacky state. A ring of friction material is then positioned on either side of the metallic ring-like element. This assembly is then placed in a press which includes an electrically conductive ring which constitutes a one turn coil. The press is closed to apply pressure to the assembly. At the same time, alternating current is caused to flow in the one turn coil to create a magnetic field which induces current flow in the metallic ring-like element. The flow of current causes the metallic ring-like element to become hot as a result of resistance and hystereses losses. The heat causes the adhesive material to bond the friction material to the metallic ring-like element.

3,798,404

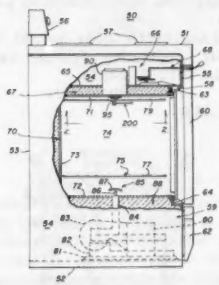
ELECTRONIC OVEN WITH MODE EXCITER

Donald J. Simon, and Louis H. Fitzmayer, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 21, 1972, Ser. No. 317,206

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **16 Claims**



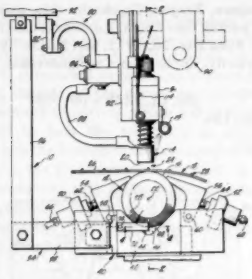
An electronic oven includes a boxlike enclosure defining a heating cavity therein, a microwave source coupled to an antenna centrally of the bottom wall of the cavity for radiating thereinto microwave energy of a predetermined wavelength for exciting a predetermined primary mode electromagnetic field in the cavity, a drive motor having a grounded conductive output shaft projecting into the cavity centrally of the top wall thereof coaxially with the antenna and parallel to the primary mode electric field, and a generally L-shaped conductive

member having two interconnected leg portions disposed in a plane normal to the shaft, one of which leg portions is connected at the free end thereof to the inner end of the shaft for rotation about the axis thereof, the conductive element being responsive to rotation thereof in the primary mode of the electric field for exciting in the cavity two secondary modes complementary to the primary mode. A generally W-shaped conductive element and a rectangular conductive element are also provided for effecting phase reversal of the secondary modes with respect to the primary mode as the element rotates. A support rack is provided in the cavity having spaced-apart parallel rods extending parallel to the direction of propagation of the electromagnetic field.

3,798,405
AUTOMATED SPOT WELDING METHOD AND APPARATUS

Clyde O. Boothe, Rolling Hills Estates, Calif., assignor to Farr Company, El Segundo, Calif.

Filed Aug. 23, 1972, Ser. No. 283,080
Int. Cl. B23k *11/00*
U.S. Cl. 219—56 **36 Claims**



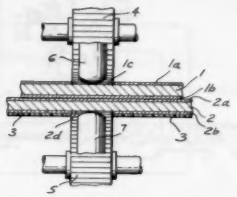
In an automated spot welding machine for producing numerous welds, at least one first and one second electrode aligned and normally spaced apart are included with at least the first or second electrode being moveable during the welding of a workpiece positioned between the electrodes. The electrodes each include a welding surface with a designated area thereof adapted to contact the workpiece during the production of each weld thereon. Means associated with at least one of the electrodes are included to selectively provide new designated areas for contact with the workpiece thereby extending the useful life of the electrode.

3,798,406
PROCESS FOR WELDING METAL COATED SHEET STRUCTURES

Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Germany

Filed Mar. 10, 1971, Ser. No. 122,674
Claims priority, application Germany, Mar. 10, 1970, 2013794; Feb. 3, 1971, 2104888
Int. Cl. B23k *9/28, 11/00*
U.S. Cl. 219—92 **11 Claims**

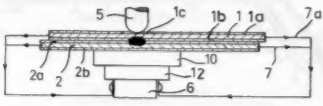
This invention is directed to a method of and apparatus for linearly and/or spot welding metal plates that have either clad, coated or oxidized surfaces. In some instances only the exposed surface coatings are removed from the zone to be welded to bare the underlying metal, after which welding is effected and, if necessary, the exposed welded zones are reclad or recoated with the same type of material as was originally removed. Where relatively thick plates are to be welded, sufficient material is removed from at least one of them to define a remaining thin web in or along the zone of welding that can be displaced or forced into linear contact with an adjacent area as an incident to welding, after which the exposed welded zone is reclad or recoated. For spot welding the plates may be bored or drilled at predetermined intervals to receive and retain sets of weldable inserts which become welded together and to the surrounding metal. Recoating or reclading of the exposed welded zones may be effected either by applying molten metal to the surface to be coated, or by wiping pre-heated metal against such surface, or by electrolytic deposition. The method is especially effective with zinc or tin coated or clad iron or steel sheets or plates and with aluminum sheets or plates having oxidized faces.



3,798,407
PROCESS FOR WELDING SHEET METAL COATED WITH LAYERS

Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Germany

Continuation-in-part of Ser. No. 823,077, May 8, 1969, Pat. No. 3,614,375. This application Sept. 16, 1971, Ser. No. 181,149
Int. Cl. B23k *9/28*
U.S. Cl. 219—92 **11 Claims**



A method for the connection of sheet metal panels coated on at least one surface with a layer by the electrical fusion of a metal, wherein the improvement comprises the steps of supplying an electric current for the fusion of metal indirectly along the sheet metal of at least one panel to the zone at which said panels are to be connected to each other, and keeping the temperature of an outer layer of at least one of said panels below the melting point of said layer.

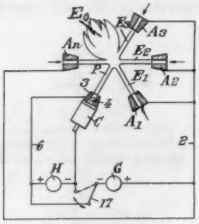
3,798,408
METHODS AND DEVICES FOR PLASMA PRODUCTION

Marc Foex, Paris; Robert Delmas, and Claude Bonet, both of Odeillo, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 888,508, Dec. 29, 1969, Pat. No. 3,714,390. This application Dec. 20, 1971, Ser. No. 209,885
Claims priority, application France, Dec. 23, 1970, 70.46416; Dec. 31, 1968, 68.182839
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **25 Claims**

A plasma generating installation comprises a pilot generator and nozzles supplying respectively convergent gas flows. These nozzles are inserted in a circuit capable of being completed across these flows by reducing the electrical resistance therein. This circuit and the supply circuit for the pilot generator are connected in parallel to a single current source. The installation is suitable for generation of plasmas of large volume.

The invention relates to methods and devices for the production of plasma jets in the midst of convergent fluid



flows giving rise to a main flow of plasma and of which at least certain of them are supplied through nozzles devoid of their own electrical supply.

3,798,409

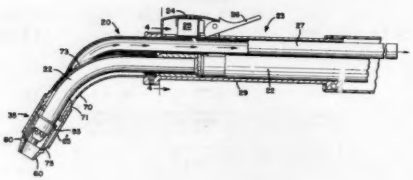
FUME EXTRACTING WELDING GUN NOZZLE

Wade E. Troyer, and Leo E. Wildenthaler, both of Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Sept. 22, 1971, Ser. No. 182,596

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **9 Claims**



A welding gun nozzle including a first passageway through which welding wire may be fed into a weld and a second passageway through which shielding gas may be directed over the weld to protect the molten metal from contamination. The nozzle also includes a fume extracting passageway having an inlet orifice so located with respect to the outlet end of the nozzle that the fumes are drawn into the nozzle from a region laterally outward from the nozzle, and thus from an area removed from the weld, so the shielding gas is relatively unaffected by the operation of the fume extracting feature of the invention.

3,798,410

SHIELD-GAS WELDING GUN

Wilhelm Dinse, Konigsreihe 12, 2 Hamburg 70, Germany

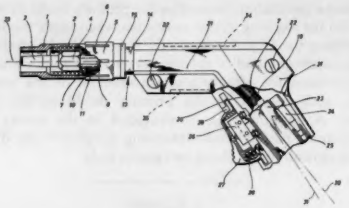
Filed Sept. 8, 1972, Ser. No. 287,590

Claims priority, application Germany, June 3, 1972, 2227118

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **18 Claims**

A shield-gas welding gun having an insulating housing forming a handle enclosing a double walled tubular body through which the welding filler rod is moved toward the contact tip; the double walled tubular body carrying shield-gas between the internal and external walls thereof, the peripheral confronting surfaces of which are roughened as by threading to increase surface area for heat exchange, and the shield-gas cooling the tubular body as it flows toward the contact tip at the end of the tubular body which is encompassed by a gas nozzle.



3,798,411

ARRANGEMENT FOR GUIDING OF WIRE ELECTRODES FOR A BURNER FOR METAL COATING BY MEANS OF AN ELECTRIC ARC

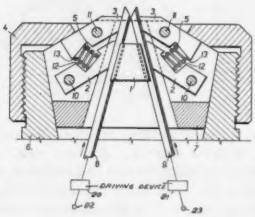
Jaromir Wagner, Prague, Czechoslovakia, assignor to Rukov, sdruzeny podnik Onv Decin, Rumburk, Czechoslovakia

Filed Dec. 26, 1972, Ser. No. 317,938

Claims priority, application Czechoslovakia, Jan. 12, 1972, 204-72

Int. Cl. B23k *9/00, 9/04*

U.S. Cl. 219—136 **5 Claims**



A burner for metal coating by means of an electric arc in which the fusible arc electrodes rest against a stable support, against which they are pressed by first spring loaded chucks. Second spring loaded chucks act on the fusible arc electrodes close to the arc. In case of irregularities of the arc electrodes, maintain thus the arc at a constant place even if the arc electrodes are bent or of irregular thickness.

3,798,412

WELDING ELECTRODE HAVING FRICTIONAL LOOP ENGAGING PORTION

Richard F. Smith, R.F.D. No. 1, Carrollton, Va.

Division of Ser. No. 845,339, July 28, 1969, Pat. No. 3,596,052. This application July 13, 1971, Ser. No. 162,214

Int. Cl. B23k *35/00*

U.S. Cl. 219—145 **3 Claims**

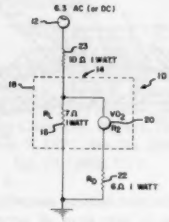
A welding electrode or welding wire having an integrally formed electrically conducting eye or loop at one end thereof that ensures a substantial area of contact with the externally tapered portion of the welding rod receiving member.

3,798,413

PROPORTIONAL TEMPERATURE CONTROL DEVICE

David Kahn, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 4, 1973, Ser. No. 357,319
Int. Cl. H05b 1/00
U.S. Cl. 219—210 13 Claims



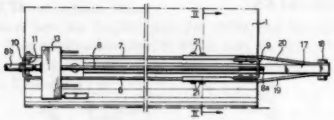
A device for maintaining a relatively constant temperature in an enclosure has a polyconductor connected in parallel to a first resistance element within the enclosure to be heated. The polyconductor is connected in series to a second resistance element located outside of the enclosure and this circuit is connected to a source of current which will cause the first resistance element to heat the enclosure as current passes therethrough; when the transition temperature of the polyconductor is reached, the first resistance element is shunted by the change in conductive state of the polyconductor and heating thereby is proportionally reduced in order to maintain the temperature within the enclosure at the transition temperature of the polyconductor.

3,798,414

HEATING ARRANGEMENT FOR DRY COPYING MACHINES

Cesare Marchetti San Martino Di Muriaglio, Turin, Italy, assignor to C.R.T. Italia S.r.l., Turin, Italy

Filed Aug. 1, 1973, Ser. No. 384,537
Claims priority, application Italy, Aug. 22, 1972, 69686/72
Int. Cl. H05b 1/02
U.S. Cl. 219—216 2 Claims



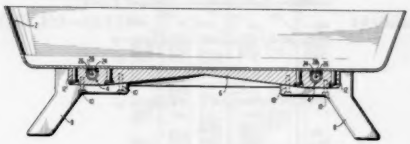
This invention provides an improved heating arrangement for the semi-cylindrical cowl of a dry copying machine, with an automatic cut-out switch operated by thermal expansion of the cowl. The cowl heater is in an external longitudinal rib on the cowl and the switch is operated by a longitudinally extending reaction rod of low expansion coefficient attached at one end to the cowl, the switch itself being carried at one end of a longitudinal bar of high expansion coefficient attached at its opposite end by one or more strips of low expansion coefficient to the end of the cowl adjacent the reaction rod. The thermal expansion of the bar and strips compensates for that of the rod during the warm-up period of the machine, allowing the latter to reach its operating temperature rapidly.

3,798,415

ELECTRICALLY HEATED COOKING UTENSIL

Elwood M. Graham, Biloxi, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.

Filed Aug. 25, 1972, Ser. No. 283,894
Int. Cl. F27d 11/02
U.S. Cl. 219—441 11 Claims



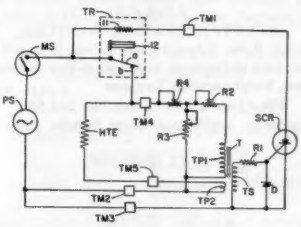
A cooking utensil having a cooking vessel of heat conductive metal and an electrical heating element is attached to said cooking vessel by a holding means formed of heat conducting metal. The heating element is pressed fit into a recess of the holding means, and the holding means is attached to the cooking vessel by fasteners. The holding means is in heat conducting relationship with a substantial area of the cooking vessel and has a thickness which diminishes progressively toward the center of the cooking vessel to shorten the time required to bring the central portion of the cooking vessel to the desired temperature.

3,798,416

TEMPERATURE CONTROL SYSTEMS

Harold A. Brouneus, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,719
Int. Cl. H05b 1/02
U.S. Cl. 219—505 6 Claims



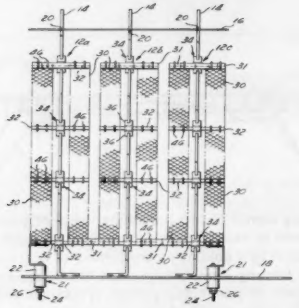
Temperature control systems or regulating circuits for use with electrical heating elements of burners of electric ranges, hot plates or cook-tops, such circuits and elements being directly energized from conventional commercial sources of power, such as 60 c.p.s. alternating current sources of 120 or 240 volts, and which systems provide high-temperature sensing and adequate temperature-limiting. Heating elements having linear positive temperature coefficients of electrical resistance are used in conjunction with thermal devices or relays, solid state circuitry including a silicon controlled rectifier as a switch or switching device, and a three winding transformer. The number of components required in the systems disclosed is substantially reduced from those required in previous known systems and an economic advantage is thereby attained. The control systems are especially suitable for use with electrically heated glass-ceramic cook-tops in order to provide improved performance while at the same time providing temperature-limiting of the burner system of the cook-tops for both electric heating-element protection and cook-top protection.

3,798,417

HEATING ELEMENT ASSEMBLY

W. Ray Bittner, Cookeville, Tenn., assignor to Gould Inc., Chicago, Ill.

Filed July 12, 1973, Ser. No. 378,698
Int. Cl. H05b 3/06
U.S. Cl. 219—532 13 Claims



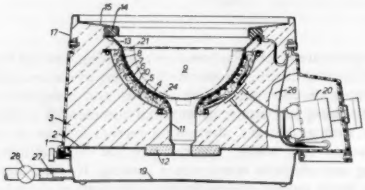
An electric heating assembly for a moving air system is described in which heating elements include thin strips of apertured, foil-like material. These elements are supported in linear reaches and arranged for an efficient element-to-space occupation ratio. The foil of the elements is a mesh that is supported in linear reaches by a plurality of insulators which are adjustably connected to a support rod. When the insulators are fixed in position, they rigidly immobilize the foil relative to the rod. According to one aspect of the invention, the linear reaches are flat. According to another aspect of the invention, the linear reaches are provided with a longitudinal fold to thereby stiffen the reach and minimize the number of supporting insulators along the reach.

3,798,418

ELECTRIC HEATING MANTLES

Michael Kurt Reik, Edgware, and Paul Leonard Johnson, Leagrave, both of England, assignors to Isapad Limited, Barnet Bypass, Borehamwood, England

Filed June 23, 1972, Ser. No. 265,500
Claims priority, application Great Britain, June 25, 1971, 29933/71
Int. Cl. H05b 3/00
U.S. Cl. 219—535 5 Claims



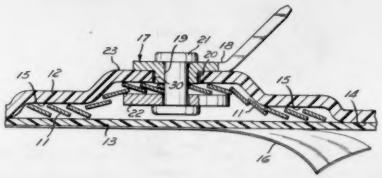
An electric heating mantle for flasks, retorts or other vessels, of the form having a heating cavity heated by electrical resistance heating means positioned close to a layer of metal gauze constituting the cavity defining surface of said mantle has its safety and operational capacity increased by the interposition, between the heating means and said metal gauze, of a moisture-proof membrane, preferably in the form of a rigid metallic cup having a bottom drain outlet for leading any spillage fluid safely away from the cavity and from contact with the heating means.

3,798,419

ELECTRICAL SURFACE HEATING ASSEMBLY

Douglas Herman Maake, Cookeville, Tenn., assignor to Gould, Inc., Chicago, Ill.

Filed Mar. 12, 1973, Ser. No. 340,094
Int. Cl. H05b 3/20; H01c 3/00; H01b 7/08
U.S. Cl. 219—541 15 Claims



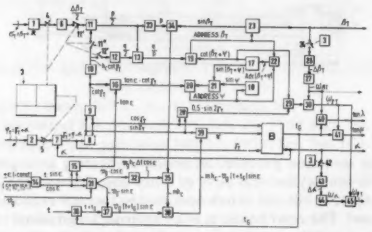
An electric conduction heating assembly for heating a base member comprises a thin strip of apertured, foil-like resistance material encapsulated between two thin sheets of electrical insulation material. The resistance strip is provided with a terminal assembly at each of its ends. Each terminal assembly includes a terminal connector having an apertured base. Prongs having an axial extent corresponding to the thickness of one of the insulation layers extends through the resistance strip, the insulation layer and the aperture in the terminal to clamp the resistance material against the prongs, whereby the prongs limit the plastic flow of the insulation layer during the riveting operation. The other layer of insulation material is provided with a pressure-sensitive adhesive coating covered by a removable protective release laminate so that the assembly may be secured to a surface to be heated. The assembly has particular utility as a heater for automotive mirrors to prevent ice accumulation on the reflecting surface thereof.

3,798,420

METHOD OF CONTROLLING MOTOR-DRIVEN DEVICES ADAPTED TO BE DIRECTED ONTO MOVING TARGETS AND APPARATUS FOR APPLYING THE METHOD

Albert Kaaz, Duisburg-Grossenbaum, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed June 2, 1970, Ser. No. 42,769
Claims priority, application Germany, June 4, 1969, 1928483
Int. Cl. G06f 15/58; G06g 7/80
U.S. Cl. 235—61.5 S 17 Claims



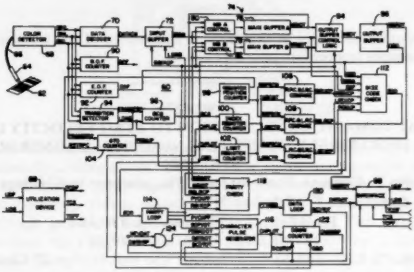
Method and apparatus for controlling motor-driven devices adapted to be directed onto a moving target, such as weapons, particularly guns, or target acquisition devices, particularly optical sighting device, radar apparatus, sound locators or infrared tracking apparatus, the target being followed by at least one of these devices and the control quantities for the drive of the devices adapted to be directed onto a moving target being

calculated by computer means, wherein based on the values of the lateral angle and elevation angle which values are derived continuously from one of the devices adapted to be directed onto a moving target, and on the values of the target velocity and the angle of inclination of the target path with respect to the horizontal plane, on the basis of the geometrical relationships which hold true for a rectilinear uniform movement, the lateral angular velocity and the elevational angular velocity are calculated and fed to the drives of the devices adapted to be directed onto a moving target.

3,798,421
DOUBLE FIELD CODE READING SYSTEM

Robert C. Gilberg, Dayton; James P. Donohue, Fairborn, and Ramesh S. Patel, Kettering, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Dec. 7, 1971, Ser. No. 205,540
Int. Cl. G06k *7/12*
U.S. Cl. 235—61.11 E **10 Claims**

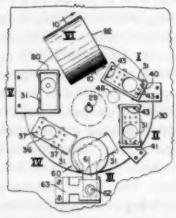


A system for processing a color bar code read optically from a coded medium is disclosed. The system includes logic for determining the binary code from color signals and storage means for temporarily storing the binary code. Logic is also provided which allows the reading of a double field tag and which checks the parity and the size of the captured message. Further, logic is provided for transmitting the captured message to a utilization device.

3,798,422
TICKET READER

Pierre G. Foret, Sudbury, and John William Donohoe, Natick, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 56,281, July 20, 1970, Pat. No. 3,689,065. This application Mar. 9, 1972, Ser. No. 233,375
Int. Cl. G06k *7/00, 7/015;* **G65g** *29/00*
U.S. Cl. 235—61.11 R **10 Claims**

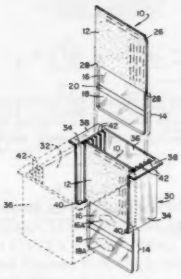


A ticket reader which has a rotatable turret and a vacuum system for moving tickets between different stations, one or more of the stations being adapted to provide tickets, one of the stations including a reader for reading the tickets, and a plurality of the stations adapted to receive the tickets after they have been read and interpreted.

3,798,423
DIAGNOSTIC DATA CARD CONSTRUCTION

Leo R. Mindick, Flushing, N.Y., assignor to Medislide Industries, Inc., Great Neck, N.Y.

Filed Oct. 4, 1971, Ser. No. 185,965
Int. Cl. G02b *21/34;* **G06k** *19/00*
U.S. Cl. 235—61.12 R **14 Claims**

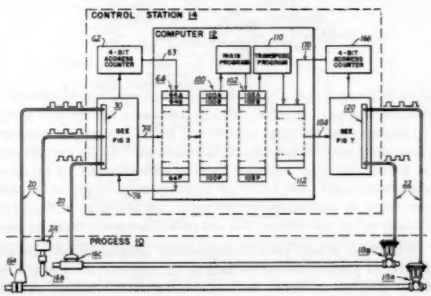


A data card adapted for use in diagnostic equipment. The card includes both an information-receiving region for presenting patient identification and test results, and a testing region which bears the specimen to be examined. The testing region comprises one or more segments which can be removed from the card for further analysis.

3,798,424
INDUSTRIAL CONTROL SYSTEM UTILIZING HIGH SPEED DIGITAL COMPUTER

Manuel P. Freitas, South Easton, and Bernard P. Laeser, Sharon, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Aug. 20, 1971, Ser. No. 173,420
Int. Cl. G05b *11/30, 15/02*
U.S. Cl. 235—150.1 **22 Claims**



An industrial process control system operated by a general purpose digital computer. A number of controlled process conditions, such as flow rate and temperature, are measured by sensors arranged to send to the computer pulse-train signals the frequencies of which are proportional to the magnitudes of respective conditions. The computer detects the incoming pulses and counts them for a fixed time period to develop corresponding digital measurement signals. These measurement signals are processed to produce corresponding digital command signals for respective process valves. The command signals are converted to respective continuous

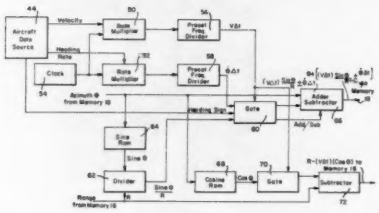
pulse-train output signals which are directed to respective process valves to control the positioning thereof.

3,798,425

TARGET MOTION COMPENSATOR

James L. Heard, Torrance; Eugene W. Opittek, Tustin, and Larry G. Rands, Torrance, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 29, 1972, Ser. No. 284,502
Int. Cl. G06f *15/50*; **G01s** *9/14*
U.S. Cl. 235—150.27 **5 Claims**



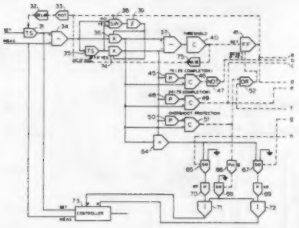
A digital scan converter stores the range and azimuth coordinates of target hits furnished by an aircraft radar processing system. The information is thereafter read out of the memory at a desired rate into a display system. The present invention compensates the stored target hit coordinates for the motion of the aircraft carrying the radar processor. The compensation of the stored targets is achieved by updating this information during memory recirculation.

3,798,426

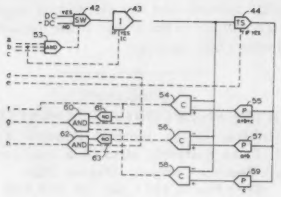
PATTERN EVALUATION METHOD AND APPARATUS FOR ADAPTIVE CONTROL

Edgar H. Bristol, II, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 829,960, June 3, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,989
Int. Cl. G06f *15/46*; **G06g** *7/66*
U.S. Cl. 235—151.1 **33 Claims**



A method is provided for automatic adaptation of process controller parameters according to the requirements of a nonlinear process in order to achieve optimum control action. This method evaluates the response of a measured process variable to upset in the form of a change in set point or load. The upset initiates the adaptation procedure, which determines evaluation intervals related to process dead time and lag characteristics as evidenced by the response of the measured variable over predetermined portions of said upset; the deviation in the measured variable from set point or related demand reference is examined over the evaluation intervals and preferably integrated, the integrated error result being indicative of a required proportional gain change in the case of one type of evaluation interval and indicative of a required reset gain change in another type of evaluation interval. Proportional and reset gains are altered in accordance with this procedure until the gains are optimized as evidenced by maximum conformity to the demand references of the measured variable response to upsets generally.

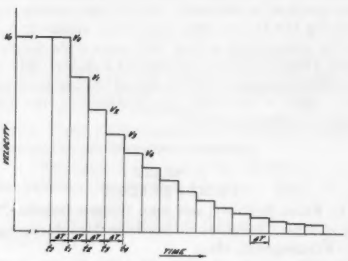


3,798,427

AUTOMATIC DECELERATION TO ZERO VELOCITY IN ITERATIVELY COMPUTING NUMERICAL CONTROL SYSTEMS

John P. Conners, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 27, 1973, Ser. No. 336,267
Int. Cl. G06f *15/46*; **G05b** *19/18*
U.S. Cl. 235—151.11 **27 Claims**



Methods and apparatus embodying improvements in numerical control systems of the genus disclosed in United States application Ser. No. 124,356 filed Mar. 15, 1971 in the name of John K. McGee, now U.S. Pat. No. 3,727,191 and particularly for simplifying and rendering more accurate the look-ahead sensing and automatic deceleration of a movable element to zero velocity as it reaches a commanded end point position. The velocity of an element moving toward a numerically defined stopping position is successively reduced to a predetermined fraction or percentage of its previous value during each iteration period once deceleration is initiated in response to comparison of the remaining distance to the end point with a distance which will be traveled during the deceleration phase. The latter distance is found by simple computations involving essentially a constant which is derived directly from the said selected, predetermined percentage. As a result of reducing the velocity by the same predetermined percentage during successive equal periods, the velocity falls in a substantially exponential fashion and the deceleration is thus smooth but consumes relatively little time.

3,798,428

ELECTRONIC TIME-KEEPING APPARATUS

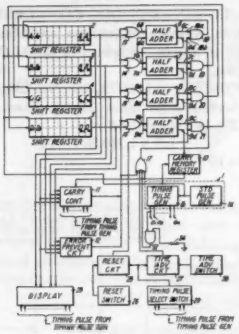
Minoru Izawa, Matsudo, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Mar. 20, 1972, Ser. No. 235,959

Claims priority, application Japan, Mar. 20, 1971, 46-15668

Int. Cl. G06f *7/385*

U.S. Cl. 235—168 **10 Claims**



An electronic time-keeping apparatus generating counting pulses for a time count. The counting pulses are stored in registers connected to input gates of adders that develop, from the counting pulses stored by the registers, output signals through gates corresponding to a time count. The adders develop carry signals that are temporarily stored by a carry memory register and are applied back to the adders under control of a carry signal controller and through the latter for developing the time count output of the adders for higher order places in the time count. The time count is displayed on visual display means as a time indication corresponding to the time count. Provision is made for initial counting errors by use of an automatic initial error preventive circuit that detects errors in the counting signals stored which may result from noise or at the start of the count and signals are developed that are applied to the adders thus varying the signal content received by the adders so that the time count output thereof is free of these initial errors. Control circuitry in the form of reset circuitry is provided for resetting the time count by applying signals at will to the adders to reset the time count output and thereby the time indication of the visual display means. The control circuitry includes time advancing circuitry by which the time count output is advanced by applying signals to the adders at will so that the time count indication is advanced and an advanced time or corrected time may be displayed. The apparatus may be embodied in small clocks.

3,798,429

APPARATUS FOR INTEGRATING THE AREA OF A SUCCEEDING PEAK SUPERIMPOSED ON THE TAIL OF A PRECEDING PEAK IN THE OUTPUT OF A MEASURING INSTRUMENT

Tatsuo Sato, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto, Japan

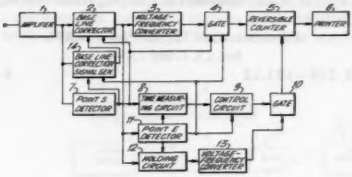
Filed July 5, 1972, Ser. No. 269,211

Claims priority, application Japan, July 15, 1971, 46-52617; Nov. 10, 1971, 46-89646

Int. Cl. G06g *7/18, 7/74*

U.S. Cl. 235—183 **10 Claims**

Apparatus for integrating the area of a succeeding peak superimposed on the tail of a preceding peak in the output of a measuring instrument. The apparatus comprises means for providing for the output of the instrument a temporary base line which has the slope of the tail at a point in the valley between the two peaks and which extends under the succeeding peak; means for integrating the area under the succeeding peak and above the temporary base line; means for calculating



the excess of the integrated area caused by the temporary base line; and means for subtracting the excess area from the integrated area to obtain the area of the succeeding peak.

3,798,430

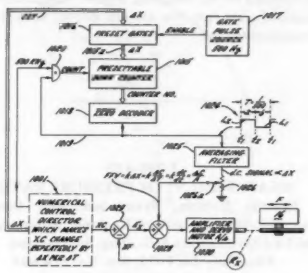
REDUCTION OF SERVO FOLLOWING ERRORS IN POSITION AND VELOCITY CONTROL SYSTEMS OF THE ITERATIVELY COMPUTING TYPE

James B. Simon, and Thomas B. Bullock, both of Fond du Lac, Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 27, 1973, Ser. No. 336,268

Int. Cl. G06f *15/46;* **G05b** *21/00*

U.S. Cl. 235—151.11 **14 Claims**

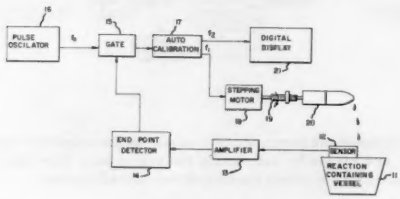


Methods and apparatus for reducing following errors in the servo drives of positioning and velocity control systems wherein the commanded position is signaled and updated by increments ΔX during each successive equal time periods ΔT, —so as to cause the controlled member movable along any axis X to travel at a velocity $V_x = \Delta X/\Delta T$. The commanded position is updated by iterative computations at least once during each period ΔT, and the ΔX increments to be used for such updating are numerically signaled and can be changed as frequently as once during each period ΔT. In order to create a feed forward signal for application to the servo in a sense additive to the position command signal, the digitally signaled number ΔX is converted into a corresponding analog signal. In the preferred arrangement, this conversion is accomplished by a counter which is preset to the number ΔX at regularly recurring instants and arranged to count down whenever the number held in the counter is other than zero. A decoder responsive to a predetermined count, for example zero, not only terminates the counting action until the next presetting but also produces a constant frequency, variable duty cycle squarewave having an average or dc. value proportional to the number ΔX and which serves as an accurate feed forward input to the servo.

3,798,431
ELECTRONIC CALIBRATION OF AN ELECTRO-MECHANICAL SYSTEM

Herbert Schulkind, Natick, and Aage Pettersen, North Reading, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,896
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.12 4 Claims

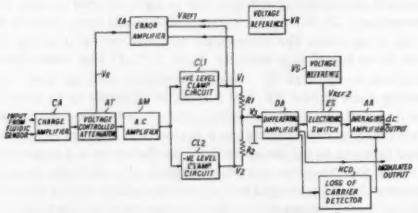


An automatic correction is provided for mechanical deviation in the display of the measured electronic input to a mechanical actuator. In a titration system, pulses are applied to a stepping motor which adds a precise volume of titrant to the mixture to be titrated. A measurement of the number of pulses is an indication of the volume added but this measurement must be corrected for variations in the strength of the titrant and/or for mechanical deviation in the delivery system. An automatic calibration system produces output pulses related in number by a specified calibrating ratio to the number of pulses applied to the stepping motor. This calibrating ratio is automatically set into the system during a calibrate mode using a standard titrant.

3,798,432
MEASUREMENT OF PRESSURE RATIO

Patrick Francis Dobson, Brentwood, and David Alfred Wyman, Goodmayes, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed July 24, 1972, Ser. No. 274,694
Int. Cl. G06g *7/16, 7/50*
U.S. Cl. 235—151.34 11 Claims

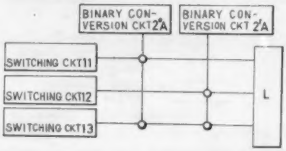


Apparatus for evaluating width-modulated pulse waveforms, more particularly fluidic pulse waveforms which are obtained at the output of a substantially symmetrically constructed two-way switching device, wherein the evaluating means are arranged to form the algebraic sum of two outputs respectively obtained at the two outlets of the said switching device with the sign of one of these outputs reversed, and to determine the pulse width-to-cycle ratio, hereinafter called the duty ratio, of the output waveform at a level halfway between the minimum and maximum levels of the waveform thus obtained.

3,798,433
DECIMAL-TO-BINARY CODE CONVERSION CIRCUIT

Noboru Masuda, Kawaguchi Saitama, and Masasi Kuroyanagi, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1972, Ser. No. 236,844
Claims priority, application Japan, Mar. 23, 1971, 46-16664; Dec. 27, 1971, 46-1951
Int. Cl. H03k *13/02*
U.S. Cl. 235—155 15 Claims

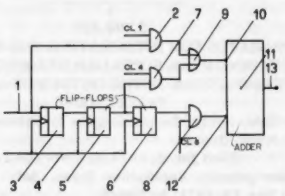


A decimal-to-binary code conversion circuit (hereafter referred to as the "conversion circuit") comprised of switching circuits which perform switching in accordance with variation of the resistance value of electrically contactless type variable resistance devices and binary circuits which generate code signals in response to the operation of said switching circuits, wherein these two types of circuits are connected in different combinations.

3,798,434
ELECTRONIC DEVICE FOR QUINTUPLING A BINARY-CODED DECIMAL NUMBER

Domenic Melcher, Bonstettenstr 26, Uster, Switzerland

Filed Aug. 22, 1972, Ser. No. 282,773
Claims priority, application Switzerland, June 12, 1972, 8738/72
Int. Cl. G06f *7/52*
U.S. Cl. 235—159 1 Claim



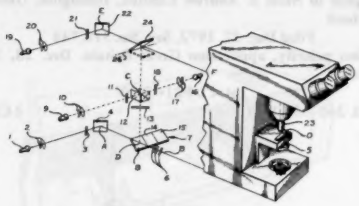
An electronic device for quintupling a binary-coded decimal number in which the several orders of binary digits as well as the powers of ten are transmitted through a single channel and represented serially under the control of a clock pulse.

3,798,435

VERSATILE LIGHT SOURCE FOR A MICROSCOPE

Klaus P. Schindl, Vienna, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Aug. 9, 1973, Ser. No. 387,081
Int. Cl. F21r 33/00
U.S. Cl. 240—2 MA 3 Claims



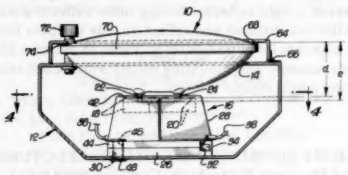
An assembly capable of providing light for incident or transmitted microscopy for ultraviolet light and white light microscopy techniques utilizes four lamps and an arrangement of mirrors capable of changing the light exit path from the assembly and selecting the desired type of light source.

3,798,436

LAMP ROTATION SOCKET

Harold Gross, Woodland Hills, Calif., assignor to Berkey-Colortran, Inc., Burbank, Calif.

Filed June 16, 1972, Ser. No. 263,604
Int. Cl. F21p 5/00
U.S. Cl. 240—3 11 Claims



A lamp rotation socket useful in a luminaire comprising an array of standard sealed beam lamps, each of which has a filament orientation and reflector configuration that produces a generally oval field of illumination. A plurality of elongate housings are provided, each housing mounting a set or line of lamps. The housings are mounted in side-by-side relationship and are each individually angularly movable about their longitudinal axes to achieve a desired overlap or separation of illumination fields. By rotating the lamps in their individual sockets, different illumination effects can be achieved. The improvement resides in a vastly simplified socket and lamp mounting in which the socket, fixed to the housing, receives the lamp posts in both of the two alternate 90° lamp positions.

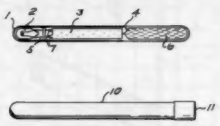
3,798,437

LIGHT SOURCE

Robert I. Sarbacher, Santa Monica, Calif., assignor to John C. Bogue, Santa Monica, Calif.

Filed Aug. 11, 1972, Ser. No. 279,763
Int. Cl. F21l 7/00
U.S. Cl. 240—10.6 R 3 Claims

A light source particularly adapted to provide emergency lighting and having an extremely long standby life is disclosed. The light source comprises a compartmentalized plastic tube having a light bulb in one compartment, a pair of electrodes in another compartment and an electrolyte in a third compartment. The electrolyte compartment houses an electrolyte which is stored in a frangible envelope. The plastic material which forms the first two compartments is stiff or rigid; while the plastic material surrounding the electrolyte compartment is flexible. To actuate the light source one squeezes or otherwise puts pressure on the flexible portion of the plastic tube to fracture the frangible envelope, thereby permitting the electrolyte to flow from its container and saturate the electrodes.



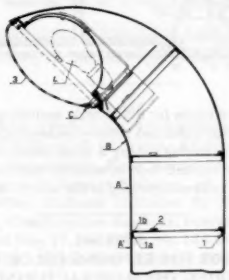
The light bulb compartment is isolated from the electrode compartment to prevent the flow of electrolyte into the light bulb compartment. Further, the light bulb compartment may be detachable. In order to prevent accidental fracture of the electrolyte envelope, the flexible portion of the plastic tube may be covered by a removable thin metallic or plastic shroud.

3,798,438

LAMP CONSISTING OF MODULAR ELEMENTS

Piero Menichetti, Piazza S. Romano 10, Lucca, Italy

Filed Nov. 26, 1971, Ser. No. 202,433
Int. Cl. F21v 1/02
U.S. Cl. 240—10 R 8 Claims



A lamp comprised of modular elements for selected assembly to provide a multiplicity of lamp forms. Said elements comprehend a cylindric element with planar parallel ends, a toroid sector element, and a bulb-carrying element or hood; there being means integral with said elements for stable interfitting relationship but which permit of ease of disengagement.

3,798,439

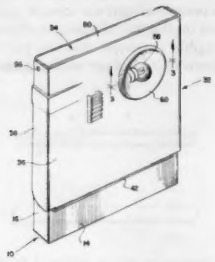
ILLUMINATION AND OTHER DEVICES FOR USE WITH PHOTOGRAPHIC FILM PACK CONTAINER

Edwin H. Land, Cambridge, and Albert J. Bachelder, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 232,060, March 6, 1972. This application July 16, 1973, Ser. No. 379,737
Int. Cl. F21l 7/00
U.S. Cl. 240—10.65 26 Claims

An illumination or other device adapted to be powered by a battery contained in a photographic film container or cassette from which the film has been removed. The illumination device disclosed is designed to be releasably engaged with and at least partially enclose a "used" photographic film container. It is particularly adapted for use as a flashlight and in-

cludes or provides for a lamp, reflector and switch, and is constructed to achieve compactness by locating at least the major

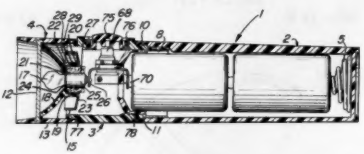


portion of the lamp and reflector within a portion of the film container previously occupied by photographic film.

3,798,440
PUSH BUTTON SWITCHING MODULE FOR FLASHLIGHTS

Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,687
Int. Cl. F21l 7/00
U.S. Cl. 240—10.66 **12 Claims**

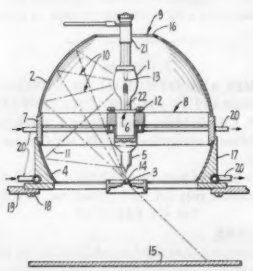


A switching module for detachably mounting to various size lens and reflector units and battery casings, said module comprising a tubular casing having a lamp-circuit controlled push button switch mounted therein with the button segment facing a flexible boot covered opening in the wall of said casing.

3,798,441
ILLUMINATOR FOR EXPOSING COLOR TELEVISION TUBES DURING THE MANUFACTURING PROCESS THEREOF AND THE LIKE

Patrick Oliver Wilson, Sunnyvale, Calif., assignor to Illumination Industries, Inc., Sunnyvale, Calif.

Filed Oct. 16, 1972, Ser. No. 297,729
Int. Cl. F21v 7/00
U.S. Cl. 240—41.35 R **8 Claims**

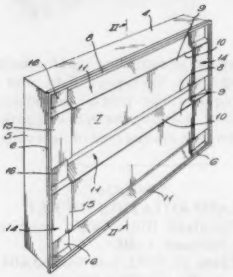


An apparatus and method for projecting light from a high intensity light source onto an object, utilizing first and second double focal point reflectors, and a focusing reflector in concert so as to concentrate the light, traveling from the source, essentially, at a point where the light is gathered and projected onto the object to be illuminated.

3,798,442
LIGHTING UNIT AND REFLECTOR THEREFOR

Alexander Ernest McCracken, Chalfont Saint Peter, England, assignor to Nicol & Andrew Limited, Hillington, Glasgow, Scotland

Filed Dec. 27, 1972, Ser. No. 318,748
Claims priority, application Great Britain, Dec. 28, 1971, 60232/71
Int. Cl. F21v 7/10
U.S. Cl. 240—51.11 R **2 Claims**

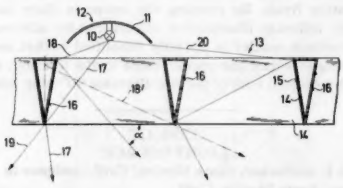


A lighting unit comprising a box-like housing open at one face thereof, a light reflector having inner reflective surfaces, outer reflective surfaces and reflective side surfaces interconnecting adjacent inner and outer surfaces to define a plurality of spaced recesses, and mounting means within each recess for supporting a light source therein.

3,798,443
LIGHT DISTRIBUTING CEILING STRUCTURE

Christian Hermann Bartenbach, Croissant-Rust-Str. 1, 8 Munich 60, Germany

Filed Jan. 26, 1973, Ser. No. 327,176
Claims priority, application Germany, Jan. 27, 1972, 2203825
Int. Cl. F21v 7/00
U.S. Cl. 240—103 R **8 Claims**



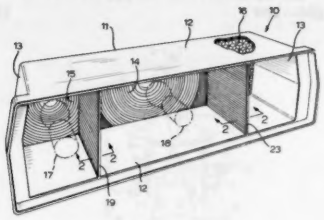
A ceiling structure consists of intersecting vertical reflecting strips or battens with reflecting surfaces with a mirror finish and having two surfaces which converge in a downward direction. Above some of the intermediate spaces, or above all intermediate spaces, between the battens or strips, reflector lights are arranged.

3,798,444

LAMP CONSTRUCTION

Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

Filed Apr. 5, 1973, Ser. No. 348,116
Int. Cl. F21v 5/00; B60q 1/30
U.S. Cl. 240—106 R 10 Claims



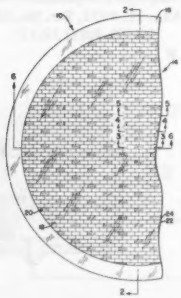
A lamp lens housing made of transparent plastic material and comprising a top wall, side walls, and end walls, the top wall having portions of varying light transmitting characteristics such that a light source mounted within the housing adjacent each portion provides a different colored light emitted to a viewer. A wall of transparent plastic material extends between the side walls from the top wall and defines two chambers within the housing into which the light sources are adapted to project. The surfaces of said wall having angularly related portions defining prisms which function to reflect light striking them back outwardly so that the light from one light source will not affect the light transmitting portion of the housing adjacent the other light source.

3,798,445

TRAFFIC SIGNAL LENS

John R. Miles, Glenview, Ill., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,386
Int. Cl. F21v 5/04; G02b 27/00
U.S. Cl. 240—106.1 12 Claims



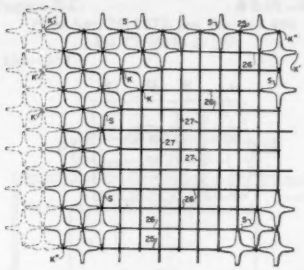
The invention relates to a traffic light lens preferably formed of polycarbonate material. The inner face of the lens is formed in a mosaic arrangement of rectangular, lenticular areas. The lenticular areas of the lens are of two types, flat areas and curved areas. The curved lenticular areas, which form the greater part of the inner surface of the lens, are curved in both vertical and horizontal directions. The flat areas are tilted to project the light downwardly from the horizontal axis of the traffic light assembly.

3,798,446

ILLUMINATOR GRID

Charles U. Deaton, Genessee Mountain, Golden, Colo.

Filed Nov. 24, 1972, Ser. No. 308,994
Int. Cl. F21v 17/00; E04f 19/00
U.S. Cl. 240—146 17 Claims



An egg crate type of illuminator grid panel has longitudinal and transverse baffles intersecting at slots in the top of one and the bottom of the other, with a series of four-legged, star-shaped parts, normally molded of plastic, attached to the underside of the baffles at alternate intersections. These stars mask the intersections and also the abutting or overlapping ends of baffles of adjacent panels, which may be rectangular in shape. The end of each leg of a star has a hook to engage a socket formed in the edge of a notch at the bottom of each baffle, beneath alternate intersections. Also, each star has upstanding fingers near the center to engage the opposite side of each baffle.

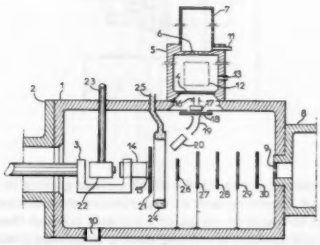
Numerous other features relating to the hangers and panels, as well as to a housing for the panels, are disclosed.

3,798,447

APPARATUS FOR DIRECTING AN ENERGIZING BEAM ON A SAMPLE TO CAUSE SECONDARY ION EMISSION

Pierre Lanusse, Romainville; Rene Hernandez, Antony, and Georges Slodzian, Chatenay-Malabry, all of France, assignors to Office National D'Etudes Et De Recherches Aerospatiales, Chatillon-sous-Bagneux, France

Filed May 17, 1971, Ser. No. 144,078
Claims priority, application France, May 27, 1970, 70.19276
Int. Cl. G01n 23/22
U.S. Cl. 250—49.5 P 14 Claims



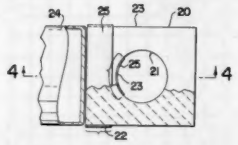
Two enclosures are separated by a diaphragm; one of them contains means for producing a beam of primary ions and the other contains means for focusing the beam of primary ions and the secondary beam emitted by the sample. Means for scanning the sample with the primary beam are provided. The device enables high resolution in spectral analyses.

3,798,448

SCINTILLATION METER-TYPE SPECTROMETER

Julious M. Menefee, Novelty; William P. Novak, Middlefield, and John A. White, Eastlake, all of Ohio, assignors to Bicron Corporation, Newbury, Ohio

Filed May 11, 1972, Ser. No. 252,193
Int. Cl. G01j 39/18
U.S. Cl. 250—71.5 R 4 Claims



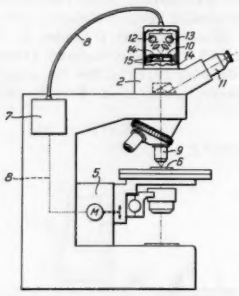
An improved scintillation meter component for a radiation detector having a photomultiplier tube optically coupled to a solid scintillation crystal. The crystal is coated with an optical decoupling agent to balance the light output sensed by the photocathode.

3,798,449

AUTOMATIC MICROSCOPE FOCUSSING DEVICE

Gunter Reinheimer, Am Berg 11, 6301 Fellingshausen, and Ludwig Leitz, Laufdorfer Weg 33, 633 Wetzlar, both of Germany

Filed May 21, 1973, Ser. No. 362,530
Claims priority, application Germany, May 23, 1972, 7219226
Int. Cl. G01j 1/20; G02b 7/04
U.S. Cl. 250—201 6 Claims



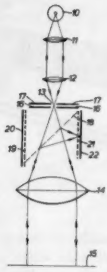
A microscope is provided with an optical grating in the light path of the objective lens at a predetermined distance from the object to focus an image of an object portion thereon. At least one photoelectric sensing device is arranged behind the grating for receiving light transmitted from the objective via the objective lens and for generating an electric control responsive to the deviation of the grating from the exact focussing position. A servo system utilizes the control signal for displacing the object along the optical axis in dependence on the signal so that the image of the object is automatically focussed on the grating. Means are provided for optionally varying the distance between the object and the grating, thereby bringing different object planes into focus.

3,798,450

APPARATUS FOR DETECTING CORRUGATION OF STRIP MATERIAL

Patricia May Reynolds, and Roger David Diamand, both of London, England, assignors to The British Non-Ferrous Metals Research Association, London, England

Filed May 31, 1972, Ser. No. 258,374
Claims priority, application Great Britain, June 1, 1971, 18281/71
Int. Cl. G01b 11/30; G01n 21/18, 21/30
U.S. Cl. 250—209 10 Claims



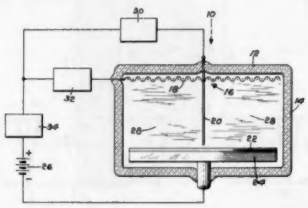
Apparatus for detecting waviness of a strip material includes two or more optical systems spaced laterally across the strip for detecting waviness of the strip along spaced lines parallel to the length of the strip, each such system being arranged to direct a beam of light at a region of the sheet, means responsive to the deflection of the light reflected from the said region for producing a signal proportional to the average or integral of the square of the deflection of the reflected light from its direction when the strip is flat, the said deflection, and means for producing relative movement between the optical system and the strip along the length of the latter. Means may be provided for subtracting the signal that is the minimum from one optical system representing the minimum waviness, from each of the signals from the other optical systems.

3,798,451

LOG PHOTODIODE

Edward H. Eberhardt, Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 21, 1972, Ser. No. 282,644
Int. Cl. H01j 39/12
U.S. Cl. 250—211 R 6 Claims



A light sensitive diode comprises an anode including a metal mesh and a wire probe disposed on the inner surface of a faceplate. A photocathode is disposed on a metal plate spaced opposite the anode and faceplate with the wire probe extending from the mesh close to the photocathode. Both anode and cathode have low resistances to permit application of maximum voltage across the gap. The device provides a non-saturating response with output signal current at the anode substantially proportional to the logarithm of input light radiation. Space charge limits, which normally occur at high light levels, are avoided in the area at the tip of the anode wire.

3,798,452

IMAGE INTENSIFIERS

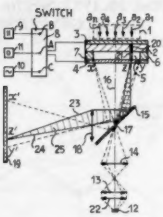
Erich Spitz; Eugene Leiba, and Georges Assouline, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 27, 1971, Ser. No. 192,873

Claims priority, application France, Oct. 30, 1970, 70.39259

Int. Cl. H01l *17/00*

U.S. Cl. 250—213 R 5 Claims



A storage-type image converter of the photoconductor and liquid crystal kind comprises a photoconductive film arranged beside a film of a mixture of nematic-cholesteric liquid crystals; electrical bias means for successively applying to said films a direct write-in voltage and an alternating erase voltage, an auxiliary light source making it possible to recover the information stored, and stigmatic optical means being provided to project said information on to a viewing screen or on to a photographic substrate or carrier associated with a photocopier.

3,798,453

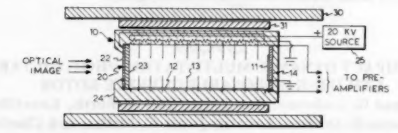
MULTICHANNEL DIGITAL PHOTOMETER

Carl E. McIlwain, La Jolla, and Edward A. Beaver, San Diego, both of Calif., assignors to University of California, San Diego, Calif.

Filed Aug. 3, 1972, Ser. No. 277,690

Int. Cl. H01j *31/26*

U.S. Cl. 250—213 VT 10 Claims



Apparatus for detecting a weak photon image is disclosed comprised of a magnetically focused image tube having a photocathode at one end, to transform a photon image into an electron image, spaced ring electrodes at progressively lower voltages starting at +20kv, to accelerate electrons to 25 kev, and a linear array of diffused p-n junction diodes for detection of photoelectron arrivals along one line of the electron image. A deflection coil permits scanning the entire photoelectron image, one line at a time. Alternatively, a matrix of p-n junction diodes may be used to detect the entire photoelectron image without scanning.

3,798,454

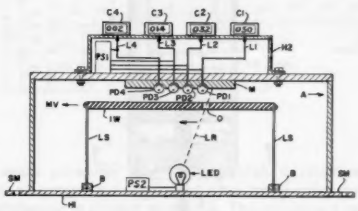
DEVICE FOR COUNTING ACCELERATIONS, MEASURING MAGNITUDES THEREOF, RECORDING AND CLASSIFYING THE SAME ACCORDING TO MAGNITUDE

David E. Weiss, Wyncote, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,480

Int. Cl. H03k *21/30*

U.S. Cl. 250—231 4 Claims



An accelerometer comprising a resiliently mounted shutter element mounted between a light source and an array of light detecting elements so that acceleration forces move the shutter element to permit the light source to activate one or more of the light detecting elements according to the magnitude of the forces and generate signals which are recorded, classified according to magnitude, and counted for evaluation at the end of a predetermined period.

3,798,455

METHOD OF REMOTE ANALYSIS OF THE COMPOSITION OF A MEDIUM AND A DEVICE FOR CARRYING OUT SAID METHOD

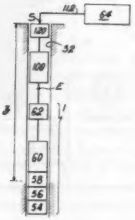
Marek Brafman, St. Martin D'Heres; Alain Godeau, Pau; Jean Laverlochere, La Tronche, and Jean-Luc Lecomte, Eghirolles, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 4, 1973, Ser. No. 320,954

Claims priority, application France, Jan. 21, 1972, 72.02095

Int. Cl. G01t *1/16*

U.S. Cl. 250—256 7 Claims



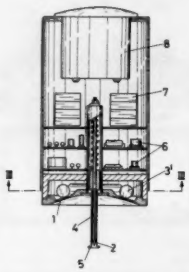
An exciting pulse is transmitted from a probe location to a medium to be remotely analyzed, *n* successive pulses of characteristic back-scattered radiation are detected and converted to *n* successive voltage pulses which are detected, delayed and directed to a buffer store. The contents of the store channels are read successively and periodically, an electric pulse is formed in each channel and proportional in amplitude to its contents, the resultant periodic pulse train being transmitted to amplitude-analyzing elements which indicate the composition of the medium.

3,798,456

PROCESS FOR TESTING THE FILLING CAPABILITY OF TOBACCO AND DEVICES FOR PERFORMING SUCH PROCESS

Josef Marek; Gunther Hayn, and Harald Rotzer, all of Vienna, Austria, assignors to Austria Tabakwerke Aktiengesellschaft vorm. Osterreichische Tabakregie, Osterreich, Germany

Filed June 9, 1972, Ser. No. 261,319
Int. Cl. G01n *23/10*
U.S. Cl. 250—308 9 Claims



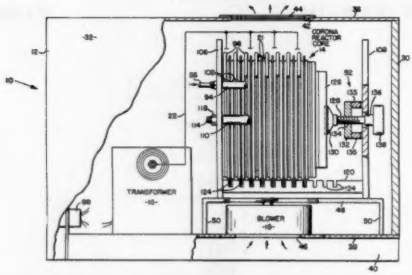
The "filling capability" of tobacco is measured by pressing a pressure plate of fixed area onto a quantity of tobacco with a constant pressure, providing a point source of ionizing radiation at a fixed position on the vertical axis of the plate and determining the quantity of radiation, either reflected by or transmitted through the compressed tobacco, from the radiation source to detection means positioned approximately in the plane of the pressure plate. Several embodiments of apparatus for conducting such measurements are disclosed.

3,798,457

CORONA REACTOR APPARATUS

Frank E. Lowther, Phelps, N.Y., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 4, 1969, Ser. No. 830,248
Int. Cl. C01b *13/12*
U.S. Cl. 250—532 22 Claims



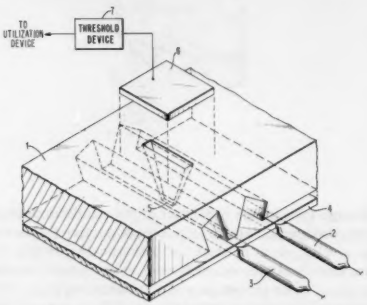
An improved corona reactor method and apparatus for subjecting a fluid reactant to a corona discharge, and particularly for generating ozone. The corona reactor includes a housing containing an air-cooled, modular, corona reactor core comprising a plurality of separate, individually removable, air-tight corona reactor cells. Each corona reactor cell includes two, spaced-apart, metallic electrodes or shell portions defining an air-tight corona discharge chamber therebetween. The exterior surfaces of the electrodes are bare and exposed to ambient; the interior (facing) surfaces are covered with a ceramic discharge dielectric; and the fluid reactant is subjected to the corona discharge within the corona discharge chamber by appropriate inlet and outlet ports. The individual cells are electrically connected in series.

3,798,458

OPTICAL SCANNER INCLUDING AN APERTURE DESIGN FOR NON-SYNCHRONOUS DETECTION OF BAR CODES

Robert L. Buckingham, Hawthorne; Jonathan B. Davis, Mahopac, and Harold H. Herd, Pawling, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,917
Int. Cl. G01n *21/30*
U.S. Cl. 250— 569 11 Claims



What is disclosed is an optical scanner for reading bar codes. The scanner is designed to be held by hand and moved above and across the bar code which is printed on a suitable record substrate. The scanner is composed of a suitable casing containing lamps in the lower portion thereof which illuminate the bar coded record. The illumination is reflected through a unique aperture in the lower surface of the scanner and directed onto a light sensor arrangement such as a photocell. The code marks are in the form of code bars such as black lines separated by white portions. The code consists of "single" code bars and "double" code bars which are, in one embodiment, twice the width of the "single" bars. The aperture arrangement of the scanner is designed according to a scheme such that the resultant signal from the detection of a single bar will always be a known fraction, such as one-half, the amplitude of the signal produced by the detection of a double bar regardless of the changes in speed at which the hand-held scanner is moved across the bar coded record.

3,798,459

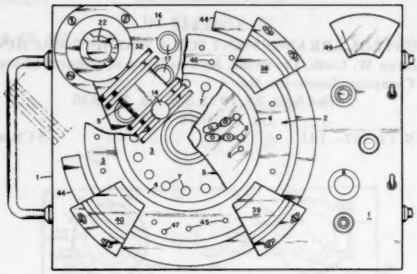
COMPACT DYNAMIC MULTISTATION PHOTOMETER UTILIZING DISPOSABLE CUVETTE ROTOR

Norman G. Anderson, Oak Ridge; Carl A. Burtis, Knoxville; Wayne F. Johnson, Loudon; James C. Mailen, and Charles D. Scott, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 6, 1972, Ser. No. 295,780
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 9 Claims

A compact analytical photometer of the rotary cuvette type designed to use small disposable cuvette rotors. A power driven cuvette rotor holder having a generally flat, circular configuration is provided with an integral, upstanding, annular lip for receiving, in an easily insertable and removable fashion, small disposable cuvette rotors. A series of axially extending apertures are disposed in a circular array through the rotor holder in axial alignment with respective cuvettes in the rotor to permit light to be transmitted through the cuvettes as the

rotor holder and cuvette rotor rotate between a stationary light source and photodetector. Additional apertures extend through the rotor holder near its periphery to permit light passage through the rotor holder for rotor and cuvette synchronization purposes. Movable rotor and cuvette



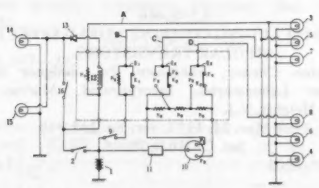
synchronization detectors are positioned along the periphery of the rotor holder for generating signals which are used to synchronize the photometer output with a computer and to provide rotor speed control. Rapid deceleration of the rotor holder and rotor for sample mixing purposes is accomplished by braking means engaging the rotor holder drive shaft.

3,798,460

APPARATUS FOR DECREASING THE INTENSITY OF CAR SIGNAL LAMPS

Tomohiro Takeda, Atsugi, and Morimasa Tanaka, Kanagawa, both of Japan, assignors to Ichiko Industries Limited, Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,874
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 LS **1 Claim**



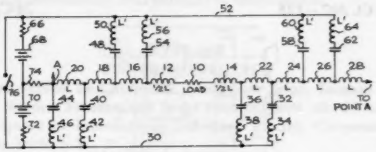
An apparatus for decreasing the intensity of car signal lamps comprises a plurality of signal lamp circuits respectively including pairs of signal lamps such as taillights, stoplights, and turn signal lights, a light intensity decrease-preventing circuit and a switch for a pair of fog lamps. The signal lamp circuits respectively have selector switches and light intensity decreasing resistors. The light intensity decrease-preventing circuit includes a relay coil and a diode connected in series to each other. The switch for fog lamps is connected in parallel to the light intensity decrease-preventing circuit. The selector switches are changed over so that the fog lamps are lighted and the light intensity of the signal lamps is not decreased. Thereby, the fog lamps can be lighted without decreasing the light intensity of the signal lamps. However, the intensity of the signal lamps can be decreased only when the fog lamps are turned off and the lighting switch is closed.

3,798,461

SHORT PULSE GENERATOR

William A. Edson, Los Altos Hills, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Nov. 21, 1972, Ser. No. 308,483
Int. Cl. H03k *3/00, 3/64*
U.S. Cl. 307—106 **8 Claims**



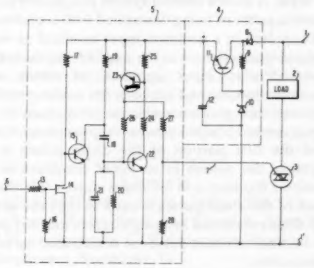
A spark generator is provided which is reentrant, can deliver all output to a single load while being either balanced or unbalanced to ground, as desired. The structure is operable over a wide frequency and power level range.

3,798,462

TOUCH CONTROLLED SWITCHING CIRCUIT

Anthony Rizzo, 40 Center St., Pittston, Pa.

Filed Dec. 21, 1972, Ser. No. 317,153
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **11 Claims**



An electronic solid state switching system is disclosed, which is responsive to the touch of the human body and operates to connect an electric load to an alternating current power distribution system, or to disconnect the load. By its presence in the electromagnetic environment attributable to the power distribution system, the human body has an induced potential which, upon contact with a touch point serving as the input connection to the switching system, produces an alternating current for control of the switching system. The circuits of the switching system are shown as including a "latching circuit" responsive to a touch of relatively long duration to establish and maintain the load in connection with the power source in a switched ON condition; a touch of relatively short duration results in disconnection of the load and establishes — or maintains — a switched OFF condition. The switching system is shown as operating from a 12 v., dc, power source provided by a rectifier circuit connected to the alternating current power supply. The ON-OFF switch device controlled by the switching system is indicated as being a suitable solid state device such as a Triac; however, the load to be switched will determine the type of switch device selected.

3,798,463

SWITCH CONTROL SYSTEM

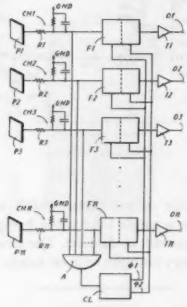
Shigehiko Ikeguchi, and Norio Yamashita, both of Gunma-ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu and Tokyo Sanyo Electric Co., Ltd., Gumma-ken, both of, Japan

Filed Oct. 24, 1972, Ser. No. 300,224

Claims priority, application Japan, Oct. 28, 1971, 46-85873; Oct. 28, 1971, 46-85874; Oct. 28, 1971, 46-85875; Dec. 15, 1971, 46-103052

Int. Cl. H01h 47/00

U.S. Cl. 307—125 20 Claims



A switch control system of the present invention comprises a plurality of channels each comprising an individual input terminal and a flip-flop, and a clock pulse generator for generating clocks in response to an individual selection signal applied to any one of the channels. The said individual selection signal is written and stored in the flip-flop of the corresponding channel as a function of the clocks for bringing the channel in an active state. A switch control system of a preferred embodiment is also capable of being controlled with a common selection signal applied to a common input terminal as well as the individual selection signals to be applied individually to the respective individual input terminals by means of a ring counter connection formed between the respective flip-flops. In accordance with another embodiment a chain of pulses is applied in a remote control manner to the common input terminal and the first portion of the chain pulses is used to forcibly return the system in an initial condition in which a predetermined flip-flop is in an active state, while the remaining portion of the chain pulses is used to shift the active state in the flip-flops connected in a ring counter manner depending upon the number of chain pulses as determined by manual individual selection.

3,798,464

ELECTRONIC TIMER

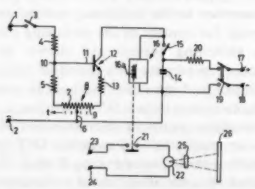
Meerten Luursema, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,140

Claims priority, application Netherlands, Sept. 11, 1971, 7112528

Int. Cl. H01h 3/34, 33/59

U.S. Cl. 307—141 7 Claims



The invention relates to an electronic timer using a constant current discharge of a capacitor. This discharge is effected through the main electrodes of a transistor.

According to the invention a linear potentiometer is incorporated in a circuit between the emitter and the base of the transistor, and the wiper of this potentiometer is connected to both the capacitor and to one of the input terminals of the device. In this embodiment it is achieved that the adjusting range of the switching time is relatively large, and that also the percentual accuracy is substantially the same throughout the adjusting range.

3,798,465

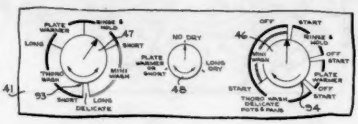
CONTROL ARRANGEMENT FOR A WASHING MACHINE

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 28, 1972, Ser. No. 293,030

Int. Cl. H01h 7/00

U.S. Cl. 307—141 3 Claims



In an automatic dishwasher, apparatus is provided for improving the cleaning efficiency thereof. The dishwasher is of the type having a plurality of electrical components sequentially operable in an operational cycle controlled by an electrical sequence control timer device adapted for automatic advancement and includes rinsing, washing, drain and fill cycle portions. An electro-mechanical device combines the selection of the operational cycle and the selection of the time duration thereof into a single control and operation. This device includes a cam actuated switch having a plurality of contact points in a package with and operatively linked with an adjustable thermally-responsive switch. A cam associated with the sequence control timer automatically cancels the time extension of the drain and fill portions, effectively limiting the time extension effect to the washing and drying cycle portions of an operational cycle.

3,798,466

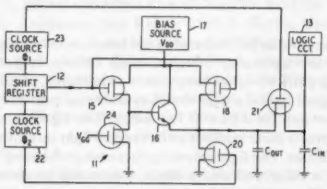
CIRCUITS INCLUDING COMBINED FIELD EFFECT AND BIPOLAR TRANSISTORS

Glen Trenton Cheney, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 22, 1972, Ser. No. 237,046

Int. Cl. H03k 19/08

U.S. Cl. 307—205 7 Claims



The output signal of a BIGFET is increased by connecting an auxiliary IGFET between the bias source and the output. The gate of the auxiliary IGFET is actuated by the input signal. Current through the BIGFET is periodically controlled to permit voltage "pull-up" by the auxiliary IGFET.

3,798,467
CIRCUIT FOR INTERFERENCE FREE RECOGNITION OF ZERO CROSSINGS OF READ SIGNALS OF MAGNETIC LAYER MEMORIES

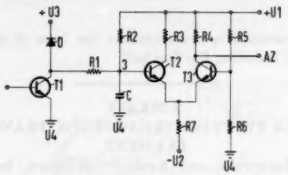
Winfried Gottwald, Martinsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 31, 1972, Ser. No. 285,553

Claims priority, application Germany, Sept. 17, 1971, 2146631

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 **1 Claim**



A circuit for interference free recognition of zero crossings of differentiated read signals comprises a zero detector and a signal checking circuit for simultaneously receiving the read signals. The signal checking circuit comprises an amplitude evaluation circuit and a time evaluation circuit. The zero detector and the signal checking circuit are connected to an output circuit which provides an output pulse in response to an output signal from the zero detector and the signal checking circuit. The time evaluation circuit comprises a charging circuit including a capacitor which is charged in accordance with a first time constant when a differentiated read signal exceeds an amplitude evaluation level of the amplitude evaluation circuit and is discharged in accordance with a second time constant when the differentiated read signal is lower than the amplitude evaluation threshold.

3,798,468
ANALOG VOLTAGE SWITCH

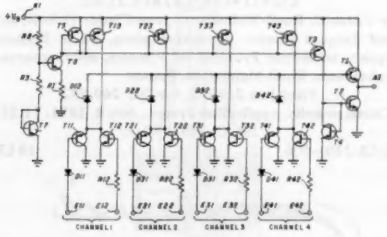
Karl Elshuber, Schnotting nr. Gemeinde Kirchdorf, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 22, 1972, Ser. No. 308,926

Claims priority, application Germany, Jan. 18, 1972, 2202250

Int. Cl. H03k *17/00*

U.S. Cl. 307—242 **2 Claims**



This disclosure concerns an analog voltage switch in which the output thereof reproduces as exactly as possible the analog voltage supplied to the input. The analog voltage switch includes a plurality of channels, each of which is provided with an analog voltage input and a control input for enabling the channel to be selected. The selected channel as determined by the control input receives an analog voltage input which appears at the output thereof. The analog voltage switch employs primarily semiconductor components and is especially applicable to use in an integrated form in that current amplifications of complementary semiconductor components and forward voltages of diodes employed in the analog voltage switch are of substantially the same magnitude and constant current sources included therein supply substantially the same current. By virtue of this arrangement, the temperature-dependent deviations of the semiconductor components employed in the analog voltage switch effectively cancel out each other such that the circuit comprising the analog voltage switch is substantially independent of temperature.

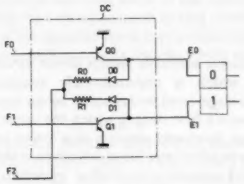
3,798,469
CONTROL CIRCUITS

Gerard Marcel Le Cardonnel, Neuilly-sur-Seine; Jacques Victor Sandre, Fresnes, and Serge Pontois, Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,043

Int. Cl. H03k *17/56*

U.S. Cl. 307—247 R **2 Claims**



A control circuit which activates a following bistable when it receives simultaneously a signal of one polarity on one of its two data inputs and a signal of the opposite polarity on its control input. This circuit is not sensitive to parasitics of the same polarity which may originate on the data or control inputs.

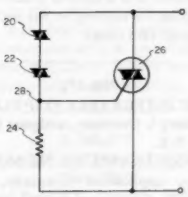
3,798,470
SELECTIVE D.C. ISOLATION CIRCUIT

Robert V. Burns, Tinley Park, and Lloyd A. Tarr, Berkeley, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 15, 1972, Ser. No. 315,699

Int. Cl. H03k *17/00*

U.S. Cl. 307—252 R **2 Claims**

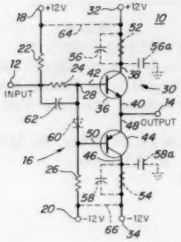


A selective d.c. isolation circuit comprising two series diacs, a resistor, and a triac which exhibits a high impedance to voltages less than a selected threshold value and a low impedance to higher voltages.

3,798,471
SWITCH DRIVER

Heyward Sturges Williams, Amherst, and Robert Robbins, Hudson, both of N.H., assignors to LRC, Inc., Hudson, N.H.

Filed Aug. 9, 1972, Ser. No. 279,258
Int. Cl. H03k 17/00
U.S. Cl. 307—255 22 Claims



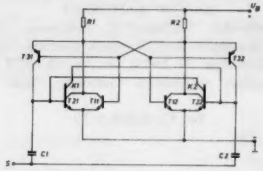
An impedance sensitive switch driver circuit for providing an output which is approximately symmetrical about a reference voltage level in response to an input signal which swings between a first state in which the input source provides a first voltage level and appears as a lower impedance and a second state in which the input source provides a second voltage level and appears as a higher impedance including: an input terminal; an output terminal; a voltage divider circuit having a first power terminal and a second power terminal, and including a first impedance having one end connected to the first power terminal and the other end connected to the input terminal for producing in the second state at the input terminal a voltage approximately equal to the second voltage level, a second impedance having one end connected to the input terminal and the other end connected to a switching terminal for producing a voltage difference between the input terminal and the switching terminal, and a third impedance having one end connected to the switching terminal and the other end connected to the second power terminal for minimizing the change in current through the second impedance between the first and second state; a semiconductor circuit including a first semiconductor having a first load electrode connected to the output terminal, a second load electrode connected to a third power terminal, and a control electrode connected to the switching terminal for turning on the first semiconductor during one of the states and a second semiconductor having a first load electrode connected to the output terminal, a second load electrode connected to a fourth power terminal, and a control electrode connected to the switching terminal for turning on the second semiconductor during the other of said states.

3,798,472
MONOLITHIC INTEGRABLE FLIP FLOP CIRCUIT

Hans Keller, Freiburg i, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,617
Claims priority, application Germany, Dec. 4, 1971, 2160260
Int. Cl. H03k 3/286
U.S. Cl. 307—291 6 Claims

This invention relates to a monolithic integrable flip flop circuit which provides for information storage and reliable switchover by inserting a transistor between the base and collector of the control transistor of the flip flop. The circuit is improved by providing each control transistor with an additional collector connected to the base of the control transistor of the other flip flop half. Alternatively, the collector of the

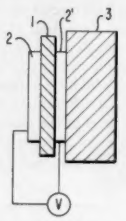


coupling transistor is connected to the base of the control transistor of the other flip flop half.

3,798,473
POLYMER TYPE ELECTROACOUSTIC TRANSDUCER ELEMENT

Naohiro Murayama, and Kenichi Nakamura, both of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1972, Ser. No. 303,758
Claims priority, application Japan, Nov. 5, 1971, 46-87607
Int. Cl. H01v 7/02; H04r 17/00
U.S. Cl. 310—8 15 Claims

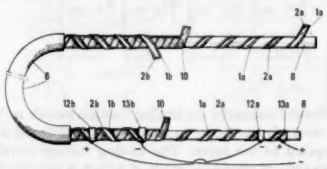


A piezoelectric type electroacoustic transducer element having a high sensitivity in a high frequency region is composed of a piezoelectric polymer sheet having on one surface thereof a backing of a material having a larger elasticity (Young's Modulus) and mass than the elasticity and mass of the piezoelectric polymer sheet.

3,798,474
PRESSURE WAVE PIEZOELECTRIC SENSOR OF CONTINUOUS STRUCTURE

Jean Cassand, Rueil-Malmaison; Jean-Claude Dubois, Royan, and Jacques Cholet, Rueil-Malmaison, all of France, assignors to Institut Francais du Petroles, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed July 5, 1972, Ser. No. 269,092
Claims priority, application France, July 8, 1971, 71.25137
Int. Cl. H04r 17/00
U.S. Cl. 310—9.6 10 Claims



Pressure wave sensor formed of at least one elongated piezoelectric element having two faces, each associated to a flexible conducting electrode substantially over the whole length of the sensitive element.

When the sensor is formed of a plurality of sensitive elements the latter are electrically connected to one another.

3,798,475

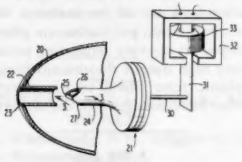
SQUARE WEDGE FLUIDIC GENERATOR FOR ELECTRICAL AND MECHANICAL OUTPUTS

Carl J. Campagnuolo, Potomac, and Henry C. Lee, Crofton, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,138

Int. Cl. H02k *35/06*

U.S. Cl. 310—15 **9 Claims**



A fluidic generator utilizing a novel fluid intake system for achieving increased power output at low pressures. The resonating cavity of the fluidic generator is provided at its fluid intake end with a mechanical member for separating and converging fluid. The cavity is adjacent an intake orifice with the member being located inside the orifice for separating fluid flowing out of the orifice. The fluid is converged at the entrance to the cavity and ultimately fills and empties the cavity to vibrate a diaphragm at resonance for generating electrical or mechanical output signals.

3,798,476

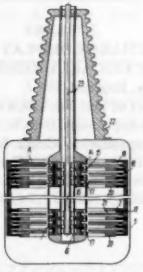
HIGH VOLTAGE ELECTRON TUBE

Evgeny Aramovich Abramian, ulitsa Tereshkovoi, 15, kv. 1, and Vasily Alexandrovich Gaponov, ulitsa Zolotodolinskaya, 9, kv. 27, both of Novosibirsk, U.S.S.R.

Filed Apr. 28, 1972, Ser. No. 248,525

Int. Cl. H01j *1/46*; **H01p** *29/02*

U.S. Cl. 313—3 **6 Claims**



A fully controllable electron tube comprising a plate, a cathode, a first electrode to accelerate an electron beam near the cathode and a second electrode between the first electrode and the plate, used to produce an approximately equipotential space between the first and second electrodes. The tube may be used to rectify and invert voltages in D.C. transmission lines of 1Mv and upward.

3,798,477

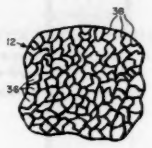
STORAGE TUBE WITH TARGET HAVING CONDUCTIVE SURFACE EXPOSED THROUGH RANDOM CRACKS IN DIELECTRIC COATING

Michael N. Soltys, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 3, 1972, Ser. No. 277,556

Int. Cl. H01j *29/30*, *29/41*

U.S. Cl. 313—68 R **14 Claims**



A target for use in an electronic tube is provided on a conductive layer of a support member and it comprises solid dielectric domains adhered to the conductive layer and spaced from one another. The peripheries of the dielectric domains have a random configuration so that the spacing therebetween defines random cracks exposing areas of the conductive layer. The target can also be a metallic mesh having openings of nonregular cell size if the metallic mesh is provided with dielectric thereon which has random cracks therein which exposes areas of the metal.

3,798,478

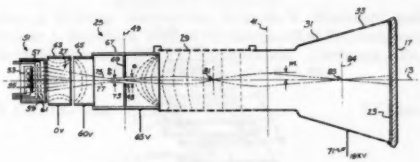
MULTIBEAM CATHODE RAY TUBE HAVING A COMMON BEAM LIMITING APERTURE THEREIN

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sept. 14, 1972, Ser. No. 288,996

Int. Cl. H01j *29/50*

U.S. Cl. 313—70 R **6 Claims**



An improved multibeam cathode ray tube electron gun is provided wherein a plurality of similar electron beams forming an array pattern are directed to crossover at a common point within the plural beam gun structure. Positioned at the point of crossover is an electrode member having a single aperture therein which uniformly and simultaneously sizes or areally limits each of the individual beams passing therethrough. This reduction in cross-sectional area of each beam comprising the pattern array results in a screen pattern array exhibiting markedly improved spot quality and resolution.

3,798,479

FLUORESCENT LAMP WITH PARTICULAR PHOSPHOR COATING

Vincent Chiola, and Robert W. Ormsby, both of Towanda, Pa., assignors to GTE Sylvania Incorporated, Seneca, N.Y.

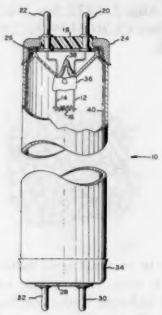
Division of Ser. No. 46,593, June 16, 1970, abandoned. This application Sept. 13, 1971, Ser. No. 179,626

Int. Cl. H01j *61/44*

U.S. Cl. 313—109 **3 Claims**

Halophosphate phosphors having desired particle size distribution, bulk density and improved dispersability and in-

creased lumen output per unit weight of phosphor incorporated into a fluorescent lamp are prepared by firing the raw materials under conventional firing techniques, finely-dividing the fired phosphors, mixing with aqueous solutions of an appropriate acid and base, washing with water to remove



residual acid and base, separating wet solids from the water, freezing the ice within the solids and removing the residual water from the solids by subjecting the frozen solids to an absolute pressure of from about 30 to about 3200 microns of mercury and to a temperature of between about 0° C to −50°C.

3,798,480

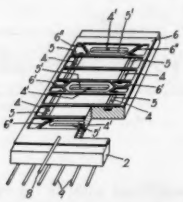
INDICATOR DISCHARGE TUBE

Tokuo Matsushita, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Denki Sangyo Kabushikikaisha, Tokyo, Japan

Continuation of Ser. No. 849,949, Aug. 14, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,779

Int. Cl. H01j *17/10*

U.S. Cl. 313—109.5 **3 Claims**



An indicator discharge tube having an insulating base plate with a plurality of grooves of predetermined shapes formed therein at predetermined locations, an anode electrode disposed opposite the insulating base plate, a plurality of cathode electrodes respectively disposed in the grooves of the insulating base plate, one portion of the anode electrode lying between adjacent cathode electrodes, and a tube having enclosed therein the insulating base plate, the anode electrode and the cathode electrodes in an airtight manner.

3,798,481

FLUORESCENT LAMP HEAT SHIELD

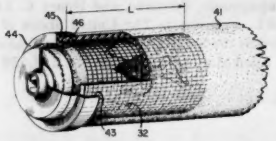
Paul Pollara, South Plainfield, N.J., assignor to Thermoplastic Processes, Incorporated, Stirling, N.J.

Filed Oct. 20, 1972, Ser. No. 299,298

Int. Cl. F21v *13/10*; **H01j** *17/04*

U.S. Cl. 313—110 **4 Claims**

A fluorescent lamp protective assembly employing a plastic shield over the fluorescent tube glass envelope is adapted for use with high output fluorescent lamps that exhibit high intensity localized heating in the vicinity of the lamp cathode. A wire mesh screen formed into a cylindrical roll is inserted with the plastic shield at each end of the lamp. The wire mesh protects the plastic shield from the heat output of the lamp provided the mesh is of the woven wire cloth type in which the crossing wire elements have been deformed during the weav-



ing process so as to be in intimate contact with each other at each intersection and not of the seamless "stocking" type. With the wire cloth mesh, polycarbonate plastic tube shields may be employed to provide implosion protection for high output and very high output fluorescent lamps without subjecting the plastic tube shield to discoloration, blistering, cracking or other heat damage from the filament.

3,798,482

GAS-DISCHARGE DISPLAY PANELS

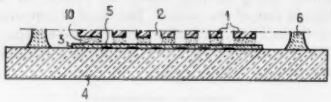
Jean Philippe Reboul, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 31, 1972, Ser. No. 239,963

Claims priority, application France, Apr. 23, 1971, 71.14579

Int. Cl. H01j *61/00*

U.S. Cl. 313—188 **6 Claims**



In gas-discharge display panels consisting of a matrix (1) clamped between two films of insulating material (3) separating it from two networks of electrodes (5), the invention provides for the interposition between said matrix and said insulating material films, of a refractory metal oxide or silicon powder material (10) mixed with a binder, in order to avoid the matrix and the two films of insulating material to stick to one another during the high-temperature operations to which the panel is submitted during its manufacture ; said powder material is preferably a refractory metal oxide.

3,798,483

GASEOUS DISCHARGE DISPLAY DEVICE WITH A LAYER OF ELECTRICALLY RESISTANT MATERIAL

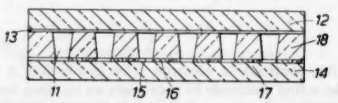
Frank Walters, Bury, England

Continuation-in-part of Ser. No. 144,872, May 19, 1971, Pat. No. 3,735,183. This application Oct. 3, 1972, Ser. No. 294,560

Claims priority, application Great Britain, May 20, 1970, 24359/70; May 30, 1970, 26198/71. The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.

Int. Cl. H01j *17/34, 61/04*

U.S. Cl. 313—188 **21 Claims**



A visual display device incorporates an array of direct-current devices. A plurality of gas-filled cavities, each forming a discharge space for one discharge device, or a single gas-filled cavity common to all discharge devices is formed between a

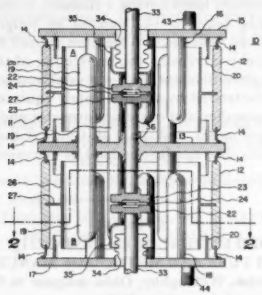
first and a second block of electrically insulating material. A plurality of transparent anode conductors on a face of a first block of electrically insulating material, sealed to the first block, and in registration with the cavities, form anode electrodes for one co-ordinate of the array. Cathode electrodes are carried by a face of the second block of electrically insulating material, and those cathode electrodes of the other co-ordinate of the array are connected by way of electrically resistive material to one of a plurality of cathode conductors. The cathode conductors, which are isolated from the discharge space or spaces, cathode electrodes and electrically resistive material are all carried on said face of the second block. The first and second blocks may be spaced through a spacer around the edge of the display device or by a third block defining the discharge spaces. A layer of insulating material covers the face of the block, the resistive material and the cathode conductors, except in the vicinity of the cathode electrodes.

3,798,484

SERIES MULTIPLE BREAK VACUUM ARC DISCHARGE DEVICES

Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,071
Int. Cl. H01j *21/20*
U.S. Cl. 313—198 **8 Claims**



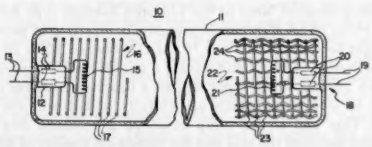
Vacuum arc discharge devices having improved electrode structure are disclosed. Such improved devices comprise a plurality of parallel, electrically conductive paths each having a pair of interrelated arcing gaps disposed therein in a series relationship so as to increase the dielectric strength of such devices and thereby to hold off increased voltages in a cylindrical container whose diameter may be dimensionally limited.

3,798,485

LAMP APPARATUS FOR IMPROVING WALL DARKENING CHARACTERISTICS

Harald L. Witting, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,326
Int. Cl. H01k *1/26*; **H01j** *1/52, 5/02*
U.S. Cl. 313—205 **7 Claims**



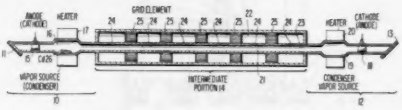
Improved electric lamp apparatus exhibiting reduced bulb wall darkening includes a diffusion barrier immediately adjacent the interior of the lamp envelope wall in the general vicinity of the lamp electrode or electrodes. Diffusion barrier is a wire-like mesh or grid spaced only a small distance from the inner surface of the envelope and adjacent thereto. Barrier diameter is a very large fraction of envelope diameter so as to avoid affecting discharge current or constricting discharge. Diffused specie emanating from the electrode selectively deposits upon the diffusion barrier leaving the adjacent envelope wall clear.

3,798,486

METAL VAPOR LASER DISCHARGE DEVICE

Karl Gerhard Hernquist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,011
Int. Cl. H01s *3/00*
U.S. Cl. 313—220 **7 Claims**



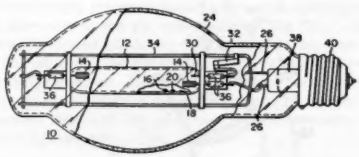
A low noise metal vapor laser discharge device of simple construction employing an anode electrode, a cold cathode electrode and condenser therebetween. The device features a relatively long intermediate portion, including a bore region and metal vapor store region, which communicates with the bore region at a plurality of spaced points along the length of the bore region, extending between the anode electrode and condenser.

3,798,487

DISCHARGE LAMP WHICH INCORPORATES DIVALENT CERIUM HALIDE AND CESIUM HALIDE AND A HIGH MERCURY LOADING

Robert J. Zollweg, Monroeville; Kenneth K. Blackham, and Walter J. Burnham, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation. Pittsburgh, Pa.

Filed July 21, 1972, Ser. No. 273,884
Int. Cl. H01j *61/20*
U.S. Cl. 313—229 **9 Claims**



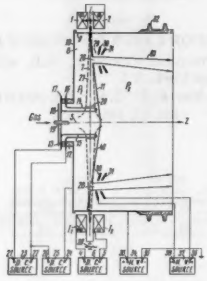
Arc-discharge device wherein the discahrge-sustaining filling includes as essential elements predetermined amounts of at least one of praseodymium halide, neodymium halide and cerium halide plus cesium halide and sufficient mercury to provide an operating mercury-vapor pressure of from 3 to 15 atmospheres, in addition to the usual starting gas. The rare-earth metal halide provides a very efficient discharge and the cesium halide plus the high mercury loading permits a high efficiency to be obtained with a relatively low minimum envelope temperature. The ratio of total gram-atoms of halogen to total gram-atoms of metal in the praseodymium, neodymium or cerium halides is from about 1.8:1 to about 2.7:1, and this provides a very diffuse, stable discharge which improves the performance of the device. Other discharge-sustaining materials desirably are added to the foregoing essential constituents to modify the color of the discharge.

3,798,488

PLASMA SOURCE OF CHARGED PARTICLES

Nikolai Vasilievich Pleshivtsev, ulitsa Rogova, 5, kv. 83; Nikolai Nikolaevich Semashko, ulitsa Birjuzova, 8, korpus I, kv. 137, and Ivan Alexandrovich Chukhin, ulitsa Maximova, 6, kv. 126, all of Moscow, U.S.S.R.

Filed July 28, 1971, Ser. No. 166,694
Int. Cl. H01j 61/28
U.S. Cl. 313—231 21 Claims



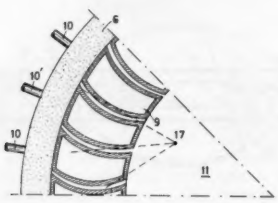
A plasma source of charged particles is provided by an arrangement having two solenoids mounted on a single axis and connected in opposition in a gas-discharge chamber to set up a magnetic field increasing along the radius; the arrangement also includes two electrodes in the gas-discharge chamber one of which made in the shape of a disk having at least one emission slit placed approximately on the median surface of the magnetic field, and a system of charged particle extraction, acceleration and focusing.

3,798,489

PLASMA FURNACE

Pierre Binard, Embourg; Georges Defosse, Wandre, and Jean Marie Jacquerie, Seraing, all of Belgium, assignors to Elphiac, Brussels, Belgium

Filed May 4, 1972, Ser. No. 250,165
Claims priority, application Belgium, May 7, 1971, 103160
Int. Cl. H01j 17/26
U.S. Cl. 313—231 4 Claims



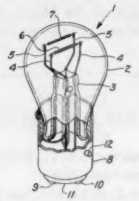
A plasma furnace comprising a chamber having inlet nozzles for a gas to be ionized, a reaction chamber defined by a large number of non-magnetic cooled metallic conduits placed side by side and electrically insulated from each other, a tube for feeding materials to be treated inside the reaction chamber, and an inductor fed by an alternating current surrounding the reaction chamber. The plasma furnace is characterized in that the metallic conduits are secured on the inside surface of a tube made of insulating material protecting the inductor, and in that at least one out of two metallic conduits defining the reaction chamber comprises at least one concave portion into which is inserted one convex portion of an adjacent metallic conduit in such a manner that the insulating tube protecting the inductor is not seen from any location inside the reaction chamber, but that the metallic conduits are separated from each other by a space preventing any contact of the metallic conduits with each other.

3,798,490

VIBRATION RESISTANT LAMP

Stanley C. Ackerman, and Thomas E. Dunham, both of Cleveland Heights, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,938
Int. Cl. H01j 1/05, 1/14, 1/38, 1/48, 19/06
U.S. Cl. 313—311 6 Claims



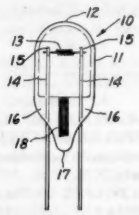
An incandescent lamp having a filament made of tungsten wire containing between 1–2 percent by weight thoria has greatly improved resistance to fracture caused by shock and vibration thereby increasing the service life of the lamp. The thoriated tungsten filament has a recrystallized grain structure which is characterized by approximately equiaxed crystals of tungsten of a smaller and more uniform size and thoria particles which are more uniformly distributed throughout the tungsten matrix than can be obtained by conventional powder metallurgy.

3,798,491

ROUNDED END HALOGEN LAMP WITH SPIRAL EXHAUST TUBE AND METHOD OF MANUFACUTRE

Robert N. Malm, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1972, Ser. No. 315,772
Int. Cl. H01k 3/00, 1/30
U.S. Cl. 313—315 10 Claims



An incandescent lamp of the tungsten-halogen type having an envelope of an aluminosilicate glass comprising in percent by weight SiO_2 between 59 to 70, Al_2O_3 between 10 to 20 and BaO between 7.4 to 28 and having a coefficient of expansion between 36 and 40×10^{-7} per °C and a tungsten filament connected to lead wires which are directly sealed into the envelope. One end of the lamp envelope is rounded and the other end contains the seal and the tipped-off residue of an exhaust tube. Enclosed in the tipped-off residue is a spiral of tungsten wire which keeps the exhaust tube open during the lead wire sealing operation.

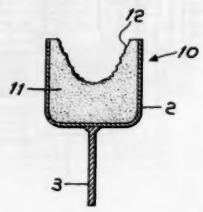
3,798,492
EMISSIVE ELECTRODE

Richard A. Menelly, Danvers, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 149,971, June 4, 1971, abandoned, and a continuation-in-part of Ser. No. 144,137, May 17, 1971, abandoned. This application Dec. 8, 1971, Ser. No. 204,469

Int. Cl. H01j *1/14, 19/06;* **H01k** *1/04*

U.S. Cl. 313—346 R **17 Claims**



An emissive electrode of the type utilized in fluorescent lamps having a bulk density gradient structure and a method for making such an electrode. A powder of a metal having a high melting point and a low vapor pressure is mixed with an electron emissive material, compressed, and heated until an exothermic reaction occurs. The interior of the resultant fused material electrode has a high density relative to the surface thereof.

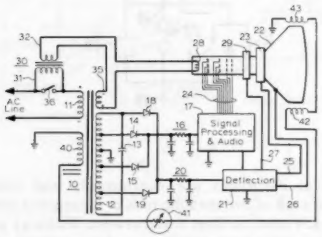
3,798,493
AUTOMATIC DEGAUSSING IN A TELEVISION RECEIVER WITH CONSTANT VOLTAGE TRANSFORMER

Hans E. Manske, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 26, 1972, Ser. No. 257,327

Int. Cl. H01j *29/06;* **H01n** *9/16*

U.S. Cl. 315—8 **7 Claims**



A solid state color television receiver incorporates a voltage regulating transformer having a filament winding supplying substantially constant operating voltage to the picture tube filament for prolonging picture tube life. Instant play operation is achieved by providing a filament transformer having a high impedance primary winding, connectable in series with the input of the regulating transformer and a secondary winding connected in series with the regulating transformer filament winding. Automatic degaussing of the picture tube is accomplished with a thermal element each time the receiver is switched on from a "cold start" with a degaussing circuit coupled across the transformer input. The receiver single pole, single throw on-off switch is connected across the primary winding of the filament transformer. When the switch is open, the regulating transformer input and the primary of the filament transformer are in series which substantially reduces the voltage across the regulating transformer input and drops its secondary voltages below operating levels for the television receiver. The filament transformer secondary winding supplies the tube filament with reduced power during standby operation and is "poled" on the transformer core to generate flux opposing that normally resulting from primary energization, reducing residual current in the degaussing coil and allowing the thermal element to cool.

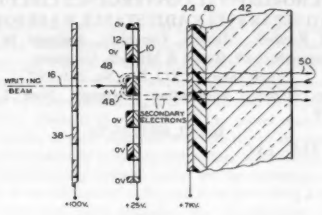
3,798,494
NON-STORAGE ELECTRON MULTIPLIER OPERATION OF TRANSMISSION STORAGE TUBE

Christopher John Curtin, Portland, Oreg., assignor to Tektronic, Inc., Beaverton, Oreg.

Filed Dec. 8, 1971, Ser. No. 206,073

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **11 Claims**



A method and apparatus is described for providing non-storage electron multiplier operation of transmission storage tubes and other cathode ray tubes employing a transmission mesh target and a separate phosphor screen spaced therefrom. The improved operation is achieved by bombarding the dielectric layer on the mesh target electrode with low velocity flood electrons to charge such dielectric to a negative voltage with respect to the target electrode, thereafter bombarding the charged dielectric with a beam of high velocity writing electrons having energies greater than the first crossover potential to cause secondary electron emission at a greater than unity ratio to provide electron multiplication and attracting the secondary electrons through the mesh openings of the target electrode to the phosphor screen. The flood electron gun may be turned off during writing so that the flood electrons do not strike the phosphor screen in order to provide better image contrast. This electron multiplication increases the current of the electron beam striking the phosphor screen and thereby increases the maximum nonstored writing speed and the brightness of the light image.

3,798,495
ELECTROOPTICAL CORRELATOR TUBE USING SECONDARY EMISSION MODULATION

Rudolf C. Hergenrother, West Newton, and John W. Lotus, Avon, both of Mass., assignors to Raytheon Company, Lexington, Mass.

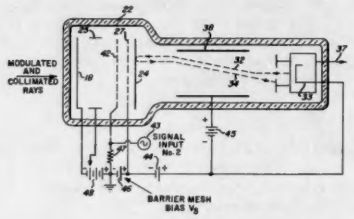
Filed Apr. 17, 1968, Ser. No. 722,052

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **4 Claims**

An electron discharge device of the image orthicon type having a barrier mesh electrode member disposed adjacent to the target mesh electrode of the electron image section. Positive or negative modulation voltage superimposed on the barrier mesh bias relative to the target mesh electrode bias causes secondary electrons produced at the storage target member by the photocurrent to be controlled in such a way as to control

the storage target charge distribution. In an electrooptical correlation system this action causes an uncorrelated input signal



to cancel out to zero charge effect on the storage target member.

3,798,496

ACTIVE HORIZONTAL CONVERGENCE CIRCUIT WITH TWO SEPARATELY ADJUSTABLE WAVEFORMS

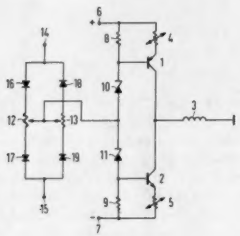
Michael Koubek, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 5, 1972, Ser. No. 259,597

Claims priority, application Germany, June 22, 1971, 2130979

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **8 Claims**



An active horizontal convergence circuit which employs separately adjustable means for converging the right and left halves of the picture. A bridge circuit is fed by two oppositely phased horizontal frequency sawtooth signals. The legs of the bridge have unilateral conducting devices so that only one side of the bridge is conducting at one time. The bridge has a pair of voltage dividers which have outputs connected to a common circuit point and from that point to an active circuit which supplies the oppositely phased currents to the horizontal convergence coil.

3,798,497

SOLID-STATE TELEVISION RECEIVER WITH MAGNETICALLY REGULATED POWER SUPPLY

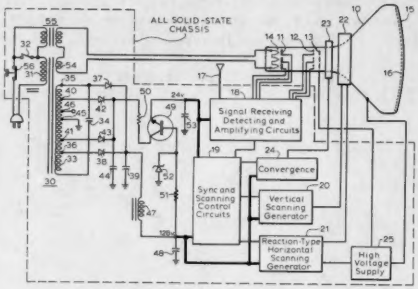
Hans E. Manske, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 312,146

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **4 Claims**

An all-solid-state television receiver chassis is powered from a line-voltage-actuated power supply including a self-limiting voltage-regulating power transformer with associated solid-state rectifiers for developing all DC operating potentials required for the chassis. The combination of an all-solid-state chassis with a voltage-regulating power transformer provides substantially undegraded performance under even extremely low-line voltage conditions while preventing excessive high-voltage and X-ray generation under even extremely high-line



voltage conditions, and also provides greatly improved reliability against component failure.

3,798,498

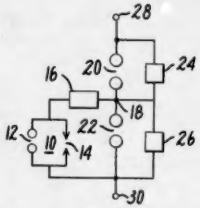
SPARK GAP DEVICE FOR LIGHTNING ARRESTER

Naoya Yamada; Nobuo Nagai, and Shoji Tada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 97,999

Int. Cl. H02h *7/24*

U.S. Cl. 315—36 **9 Claims**



Two discal electrodes are eccentrically and rotatably mounted on each of two metallic rods in superposed relationship with each other to form therebetween discharge gaps in parallel relationship having uniform and nonuniform electric fields. Recesses are formed on those portions of arc quenching plates facing the spark gaps.

3,798,499

DISC-SEALED ELECTRON DISCHARGE TUBES

Hinrich Heynisch, Graefelfing; Josef Kellerer, and Walter Schneider, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 13, 1972, Ser. No. 297,339

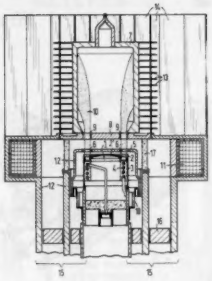
Claims priority, application Germany, Nov. 2, 1971, 2154485

Int. Cl. H01j *7/46, 19/80*

U.S. Cl. 315—39 **6 Claims**

A disc-sealed electron discharge tube wherein the grid electrode or electrodes and a hollow anode each have a flat surface provided with an annular slot for the passage of electrons.

radial spoke-like elements extend across said slots, the radial elements in each electrode being aligned with the radial elements in the other such electrodes, and wherein means are provided to magnetically focus the hollow electron beam.

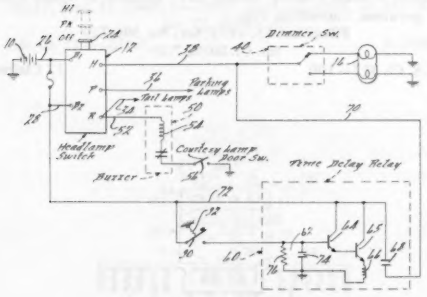


3,798,500

TIME DELAY HEADLAMP CONTROL SYSTEM

Dennis E. Florence, Detroit; Frank R. Winders, Jr., Birmingham, and Charles E. Wontrobski, Southfield, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 3, 1971, Ser. No. 139,333
Int. Cl. B60q *1/04*
U.S. Cl. 315—82 **3 Claims**



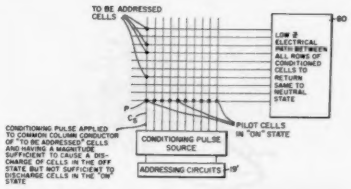
A vehicle headlights control system operative to illuminate the headlamps for a preselected period of time after the headlight switch has been opened. The circuit control system is manually operated to energize a switch assembly illustrated in the form of a relay, the relay having a set of contacts associated therewith to interconnect the headlights with a source of electrical energy until such time as the relay is de-energized. A timing circuit is provided which, when timed out, will cause the relay to de-energize and disconnect the headlights from the source of electrical energy. The system further includes a door switch assembly which senses the condition of the headlight switch or running light switch being closed when the operator opens the door of the vehicle. An audio or visual signal is provided to indicate this condition.

3,798,501

ELECTRONIC CONDITIONING OF GAS DISCHARGE DISPLAY/MEMORY DEVICE

John W. V. Miller, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 14, 1972, Ser. No. 217,989
Int. Cl. H01j *7/30*
U.S. Cl. 315—169 TV **8 Claims**


TO BE ADDRESSED CELLS
LOW Z ELECTRICAL PATH BETWEEN ALL ROWS OF CONDITIONED CELLS TO RETURN SAME TO NEUTRAL STATE
PILOT CELLS IN "ON" STATE
CONDITIONING PULSE SOURCE
ADDRESSING CIRCUITS

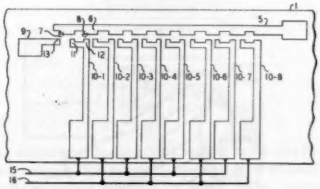
There is disclosed the improved electronic conditioning of a gas discharge display/memory panel. In the addressing of a row-column gas discharge display/memory panel which comprises a discharge cell matrix wherein one or more discharge cells are to be addressed along a common row or column, the improvement wherein the border of the panel matrix comprises a plurality of pilot cells and wherein the to-be-addressed cells are electronically conditioned before addressing by applying a conditioning voltage pulse to the common row or column of to-be-addressed cells and then providing a low impedance electrical path between the conditioned row or column of cells and all of the rows or columns of cells orthogonal to the conditioned row or column so as to return the conditioned cells to a neutral state, the magnitude of the conditioning pulse being sufficient to cause discharge of cells in the off-state, but not sufficient to cause discharge of cells in the on-state.

3,798,502

PLANAR GAS DISCHARGE SHIFT REGISTER

Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1972, Ser. No. 318,557
Int. Cl. H03b *37/00*
U.S. Cl. 315—169 TV **16 Claims**

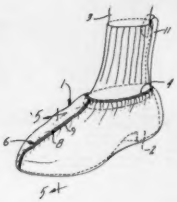


Planar d.c. gas discharge shift registers are disclosed which comprise a single cathode and two sets of anodes to which voltages are applied in alternate clock phases. The shaping of the electrodes allows a glow discharge to be propagated unidirectionally down the shift register as the clock voltages are applied. The cathodes are of planar geometry and are disposed upon a planar substrate. In one embodiment both sets of anodes are on one side of the cathode, while in another configuration the two sets of anodes enclose the cathode. Another alternate embodiment features two sets of cathodes enclosing respective anodes. A "write" anode is also provided to initiate the flow discharge at one end of the shift register.

3,798,503
PROTECTIVE FOOT COVER

Ray E. Larsh, Milwaukee, and Donald I. Urbansky, Thiensville, both of Wis., assignors to Kleen Test Products Inc., Milwaukee, Wis.

Filed June 15, 1972, Ser. No. 263,149
Int. Cl. A61n 1/14
U.S. Cl. 317—2 B 5 Claims

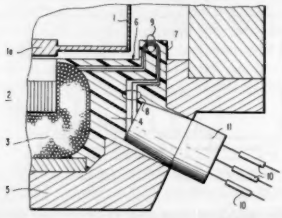


A sanitary and protective foot and shoe cover is formed of a single sheet of flexible material. A top opening in the cover accommodates the leg of the wearer. The cover includes a continuous seamless bottom sole portion and a top portion having a forward toe and rear heel seam extending upwardly from the sole portion to the leg opening. An elastic band is provided about the opening and through the forward toe seam to provide a covering over the foot which generally conforms to the foot and is resiliently attached thereto. A conductive tape is sewed to the seamless sole portion and is extended upwardly through the protective cover at the non-elasticized heel seam.

3,798,504
DEVICE FOR SHUTTING OFF DRIVE MOTORS OF ROTATING MACHINE PARTS IN CASE OF OVERLOAD AND/OR DESTRUCTION OF A MACHINE PART

Ottmar Kreissl, Dachau, and Eckhard Pritsch, Haaren, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg, Munich and URANIT Vran-Isotapentrennungs-GmbH, Julich Stetteniche, both of, Germany

Filed Mar. 27, 1972, Ser. No. 238,339
Claims priority, application Germany, Mar. 25, 1971, 2114406
Int. Cl. H02h 7/08
U.S. Cl. 317—13 R 6 Claims

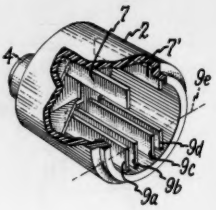


An installation for shutting off the drive motors of rotating machine parts in case of overload or short-circuit by extending the power supply wires between the stator winding of the motor and a connector plug, loop-shaped in a boss protruding into the space accommodating the rotating machine part so that the power supply wires are broken when the boss is sheared off upon mechanical failure of the machine part; in case of short-circuit, fuses connected into the power supply circuit ahead of the connector plug will also open the power supply circuit.

3,798,505
LOW VOLTAGE SURGE ARRESTER

Ronald M. Reckard, and Raymond I. Morse, both of Pittsfield, Mass., assignors to General Electric Company

Filed Sept. 25, 1972, Ser. No. 292,079
Int. Cl. H02h 3/22
U.S. Cl. 317—68 12 Claims

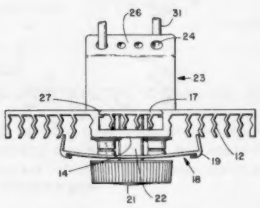


A secondary surge voltage arrester having a high impact resistant molded housing that is provided with supporting struts for mounting a sparkgap assembly in a desired, predetermined spaced relationship with respect to the interior walls of the housing thereby to minimize the risk of flashover of the sparkgap assembly. The arrester is further characterized by incorporatng a special spring that is effective to maintain a precise sparkgap electrode spacing and at the same time to limit lateral movement of the spark-gap assembly within the housing.

3,798,506
POWER CONTROL DEVICE WITH HEAT TRANSFER MEANS

James William English, Dallas, Tex., assignor to Atmos Corporation, Carrollton, Tex.

Filed Nov. 15, 1972, Ser. No. 306,729
Int. Cl. H05k 7/20
U.S. Cl. 317—100 12 Claims



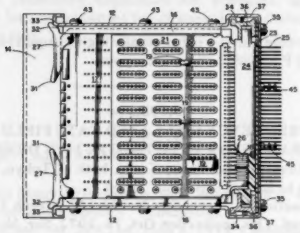
The particular embodiment described herein as illustrative of one form of the invention utilizes a wall plate for mounting a power control device such that the control device is received within a wall opening and a knob or the like projects outwardly therefrom for operating the device. A heat transfer member is utilized which makes a terminal connection between electrical wires and portions of the control device. The heat transfer member provides an electrical insulation barrier and at the same time transmits heat generated by the control device through the wall plate to a cover, with the cover being isolated from the face plate.

3,798,507

RACK ASSEMBLY FOR ELECTRICAL TERMINAL PANELS

Neil F. Damon, Cumberland, and Herbert G. Yeo, Lincoln, both of R.I., assignors to Augat, Inc., Attleboro, Mass.

Filed Nov. 2, 1972, Ser. No. 303,100
Int. Cl. H02b 1/62
U.S. Cl. 317—101 DH **5 Claims**



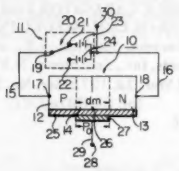
A mounting apparatus of simplified construction suitable for the removable attachment and electrical interconnection of a multiplicity of logic panels which include appropriate electrical circuitry and connection means.

3,798,508

VARIABLE CAPACITANCE DEVICE

Tadao Kohashi, Kadoma, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Continuation of Ser. No. 72,695, Sept. 16, 1970, abandoned. This application July 10, 1972, Ser. No. 270,270
Claims priority, application Japan, Sept. 18, 1969, 44-75637; Sept. 19, 1969, 44-76061; Sept. 22, 1969, 44-77179
Int. Cl. H01l 3/00
U.S. Cl. 317—234 R **2 Claims**



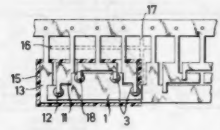
This specification discloses variable capacitance devices which vary their capacitances under the influence of DC bias voltages or radiations. One embodiment comprises a PN junction diode, a dielectric thin film deposited on the surface of said junction diode at which the junction terminates and a conducting electrode deposited on the dielectric thin film, in which the area of an equivalent plate electrode formed in said junction diode is varied by changing the thickness of a depletion region. In another embodiment, a nonlinear resistance layer deposited on the dielectric thin film is employed. As a DC voltage as applied to the nonlinear resistance layer is increased, the lateral conductivity of the nonlinear resistance layer increases and the area of the equivalent plate electrode facing the conducting electrode is increased. A further embodiment employs a thin film transistor or a MIS transistor to vary the area of the equivalent plate electrode provided therein.

3,798,509

SEMICONDUCTOR CIRCUIT ARRANGEMENT

Liboslav Vladik, Nurnberg, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronik mbH, Nurnberg, Germany

Continuation of Ser. No. 93,821, Nov. 30, 1970, Pat. No. 3,708,851. This application Oct. 3, 1972, Ser. No. 294,690
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R **12 Claims**



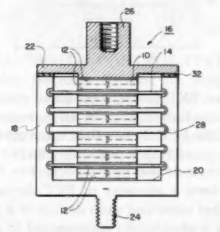
The semiconductor wafers for a rectifier circuit of the type wherein the conductors are formed from a single sheet of conductive material and shaped so that wafers may be inserted therebetween, are all simultaneously inserted and held in place by means of a holding device or jig which then remains in the finished device. The holding device is a sheet or plate of synthetic material having perforations or openings corresponding to the desired locations of the wafers in circuit arrangement and having a thickness substantially equal to that of the wafers. The wafers are held or mounted in the perforations by static friction as a result of an elastic layer provided between the walls of the perforation and the edges of the wafer.

3,798,510

TEMPERATURE COMPENSATED ZENER DIODE FOR TRANSIENT SUPPRESSION

John M. Erickson, and Bernard Reich, both of Ocean County, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 21, 1973, Ser. No. 334,339
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **3 Claims**



A Zener diode unit having zero temperature coefficient for breakdown voltage, for power applications in ground vehicle and aircraft electrical systems for shielding of voltage-sensitive solid-state circuits against voltage transients.

3,798,511

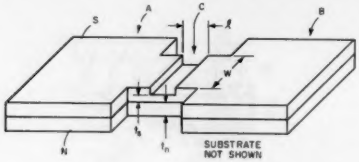
MULTILAYERED THIN FILM SUPERCONDUCTIVE DEVICE, AND METHOD OF MAKING SAME

Harris A. Notarys, Pasadena, and James E. Mercereau, South Laguna, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 7, 1973, Ser. No. 338,907
Int. Cl. H01l 3/00, 5/02
U.S. Cl. 317—234 R **21 Claims**

Techniques are disclosed for fabrication of superconducting thin film structures which show Josephson-like effects and

which allow fabrication of standard components, such as resistors and capacitors in circuits, starting with the deposition of superimposed thin films of selected metals at least one of which is superconducting, and all of which are stable (i.e., will not diffuse and are sufficiently inert to be chemically stable under normal use). The thin films are all effectively removed around the desired structure by anodization through a photoresist mask or by ion beam etching. A structure which shows



a Josephson-like effect is produced by so manipulating the thin films that a thin line region across a narrowed section of the layered thin films is produced with a lower transition temperature than in the surrounding layered films. This is done by altering the ratio of the thickness of the superconductive thin film to the thickness of the non-superconductive thin film in the thin line region and controlling the dimension, *l*, of the thin line region in the direction of current flow.

3,798,512

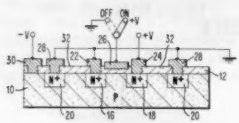
FET DEVICE WITH GUARD RING AND FABRICATION METHOD THEREFOR

Dale L. Critchlow, Lincolndale, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 766,894, Oct. 11, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,286

Int. Cl. H011 *11/14*

U.S. Cl. 317—235 R **7 Claims**



An N-channel FET device is provided with an N type guard ring to prevent surface leakage by an inversion layer formed at the surface of the FET device that is covered with an insulating layer. The guard ring is preferably an N+ diffused layer or region that surrounds the FET device. For integrated circuit applications where a plurality of FET devices are used, N+ guard rings either surround each device or a group of devices. The guard ring is electrically connnected to ground and the P type substrate is reverse biased thereby preventing surface leakage.

3,798,513

SEMICONDUCTOR DEVICE HAVING A SURFACE PARALLEL TO THE {100} PLANE AND A CHANNEL STOPPER PARALLEL TO THE {111} PLANE

Minoru Ono, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

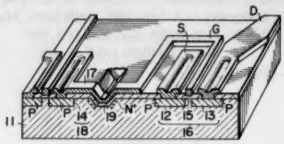
Filed Dec. 1, 1970, Ser. No. 94,089

Claims priority, application Japan, Dec. 1, 1969, 44-95707

Int. Cl. H011 *19/00*

U.S. Cl. 317—235 R **6 Claims**

A semiconductor device having a parasitic channel stopper, in which a major surface of the semiconductor substrate lies in a plane parallel to a {100} plane; a predetermined portion of the major surface in which a parasitic channel is induced is converted into a {111} plane by etching the {100} plane; since the converted portion under a passivation film, such as



silicon dioxide film is a substantially highly doped region (N^+), it acts as a P parasitic channel stopper.

3,798,514

HIGH FREQUENCY INSULATED GATE FIELD EFFECT TRANSISTOR WITH PROTECTIVE DIODES

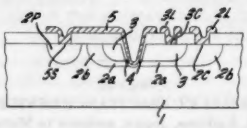
Yutaka Hayashi, and Yasuo Tarui, both of Tokyo, Japan, assignors to Kogyo Gijutsuin, Japan

Continuation-in-part of Ser. No. 24,167, March 31, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 298,005

Claims priority, application Japan, Nov. 20, 1969, 44/92514

Int. Cl. H011 *11/00, 15/00*

U.S. Cl. 317—235 R **7 Claims**



A field-effect transistor comprising a protective element constituted of two or more diodes connected in reversed relation, said protective element having such a structure that a region adjacent to another region at the same potential as a gate electrode has an impurity of higher concentration than that of at least one portion of region adjacent to said first region, or said protective element having at least one Schottky junction.

3,798,515

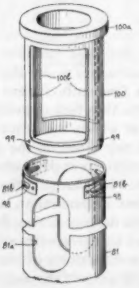
FUEL IMMERSIBLE CAPACITOR FOR MEASUREMENT OF MASS OF LIQUID FUEL IN A TANK

Sebastian F. DiGiacomo, Merrick, N.Y., assignor to Gull Airborne Instruments, Inc., Smithtown, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,718

Int. Cl. H01g *5/01*

U.S. Cl. 317—246 **6 Claims**



Capacitance apparatus for measuring the mass of liquid fuel in the tanks of an aircraft. The capacitance elements and other parts of the circuit are designed to have very high accuracy, so

that no calibrating adjustment is required during or after installation. Apparatus is provided for electrically inspecting the capacitance elements without removing them from their operating positions. This apparatus includes a fault isolation probe having terminals connected by slack conductors to the capacitance elements. The fault isolation probe is mounted in the tank, and is removable from the tank without interrupting the circuit connections to the capacitors, so that after withdrawing the fault isolation probe from the tank, electrical tests of the capacitors may be made through the slack conductors, while leaving the capacitors in their operating positions. Fuel level measuring capacitors are provided, as well as capacitors for compensating for changes in the dielectric constant of the fuel.

3,798,516

CERAMIC CAPACITORS WITH NOBLE ELECTRODES ALLOY

Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 260,244, June 6, 1972, Continuation-in-part of Ser. No. 136,190, April 21, 1971, which is a continuation-in-part of Ser. No. 873,055, Oct. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 705,305, Feb. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 626,394, March 28, 1967, abandoned. This application Jan. 17, 1973, Ser. No. 324,491

Int. Cl. H01g 1/01

U.S. Cl. 317—258 **4 Claims**

Metalizing compositions comprising alloys of three or more metals are used in ceramic capacitor electrodes and capacitors therefrom. The alloys have a critical surface area. The specific metals of the alloy are palladium, platinum and gold. The metalizing compositions are especially suitable for producing capacitors on ceramic dielectric substrates which contain bismuth stannate.

3,798,517

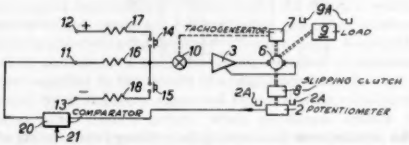
CAMERA LENS CONTROL MECHANISM

Joseph Colin Whitehouse, Blaby, England, assignor to The Rank Organisation Limited, London, England

Filed Dec. 22, 1971, Ser. No. 210,891

Int. Cl. G03b 3/10

U.S. Cl. 318—3 **7 Claims**



The invention concerns a control module for attaching to a lens and including an actuator and a feedback path, the actuator driving the controlled lens element through a slipping clutch. The invention provides switch means on the module for injecting fixed signals into the feedback system to drive the actuator to either end of the travel of the controlled element to align same with a feedback device (e.g. a potentiometer) on setting up the module on the lens.

3,798,518

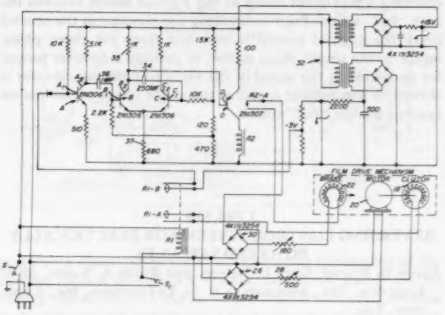
VARIABLE DURATION BRAKING CIRCUIT FOR A MOMENTARY INTERMITTENTLY DRIVEN WEB TRANSPORTING MECHANISM

George E. Evan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,519

Int. Cl. H02p 3/04

U.S. Cl. 318—6 **8 Claims**



A momentary intermittently driven web transporting mechanism having incorporated therein a variable duration braking circuit for a web supply reel. In those instances where a web drive mechanism is momentarily intermittently operated for successively driving the web short distances, a shorter momentary braking time is required to prevent rotation of the supply reel than in those situations where the web drive mechanism is operated for a time period sufficient to drive a web take-up reel and web at substantially maximum torque or speed. the variable duration braking circuit of this invention provides a momentary braking time period for the supply reel following momentary inactivation of the brake of a duration that is a function of the time period that the braking circuit is inactivated and/or the drive mechanism operated to transport the web.

3,798,519

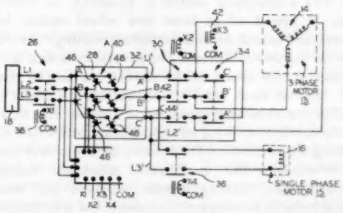
PLURAL MOTOR CONTROL SYSTEM

Victor J. Habisohn, Hoffman Estates, Ill., assignor to Power Electronics International Inc., Chicago, Ill.

Continuation-in-part of Ser. Nos. 29,869, April 20, 1970, and Ser. No. 284,342, Aug. 28, 1972. This application Feb. 7, 1973, Ser. No. 330,421

Int. Cl. H02p 1/54

U.S. Cl. 318—46 **37 Claims**



A motor control system including a three phase AC motor means for driving a load at high speed and a single phase AC

motor means for driving the load at a lower speed. The electrical energy transferred to the three phase motor means may be progressively increased until the three phase motor means operates at said high speed; and the electrical energy transferred to the single phase motor means may be progressively increased until the single phase motor means operates at said lower speed. In an elevator application of the subject motor control system, the elevator movement from one vertical level to a second level is started with the three phase motor means, and the elevator speed is progressively increased until reaching a maximum speed as the 3 phase motor reaches the high "full" speed. Prior to levelling the elevator at the second level, the control system is switched from the three phase motor to the single phase motor, to provide a counter torque for decelerating the speed of the elevator until the elevator is slowed to a minimum speed as the single phase motor means reaches the low "full" speed.

3,798,520

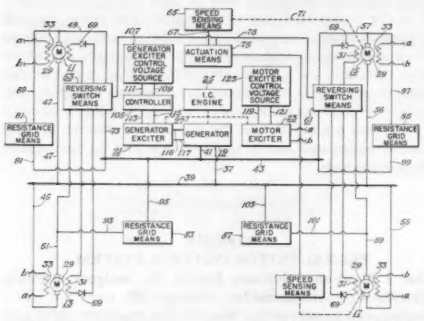
REVERSING CONTROL SYSTEM FOR ELECTRICALLY POWERED VEHICLES

Aaron D. Friend; Gary L. Nelson, and Royce A. Yoder, all of Longview, Tex., assignors to R. G. LeTourneau, Inc., Longview, Tex.

Filed May 3, 1971, Ser. No. 139,659

Int. Cl. H02p *5/26*

U.S. Cl. 318—55 **5 Claims**



A control system for effecting reversal of electrically powered vehicles, typically heavy duty off-road type work vehicles having electric motor driven wheels, characterized as follows: (1) a reversing switch is actuated, or reversed, in response to speed of at least one wheel motor below a predetermined speed, without requiring waiting for reversal of polarity on the power buses; (2) a reversing switch is reversed in response to the speed of the slowest turning of two wheel motors, one on each side of the vehicle to effect uniform reversal of the vehicle, regardless of whether it is in a turn in either direction or moving straight ahead, and without requiring waiting for reversal of the polarity on the power buses; and (3) a reversing switch is actuated when the voltage drop across a slowest turning motor becomes low enough to operate a current sensitive relay connected with the reversing switches, the two wheel motors being connected such that there is no cross feed therebetween and in bucking relationship with a regulated voltage source to effect optimal response. Also disclosed are specific structure, interconnection, and operational details.

3,798,521

CIRCUITRY FOR SYNCHRONIZING A MECHANICAL RESONATOR

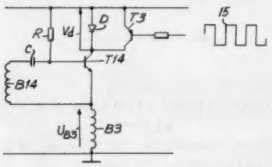
Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S. A., Lausanne, Switzerland

Continuation of Ser. No. 173,564, Aug. 20, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,678

Claims priority, application Switzerland, May 4, 1971, 6545/71

Int. Cl. H02k *33/02*

U.S. Cl. 318—128 **10 Claims**



A mechanical resonator, with a pilot frequency *f*, is synchronized by means of an electromagnetic maintenance motor component governed by a modulated voltage generator of frequency *n f*.

3,798,522

ARRANGEMENT FOR EXCITING AN ASYNCHRONOUS START SYNCHRONOUS MOTOR

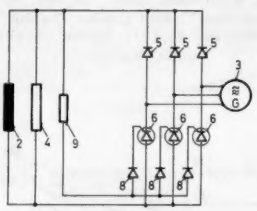
Hans Pisecker, Tullin, Austria, and Werner Schicht, Birr, Switzerland, assignors to Brown Boveri & Company Limited, Baden, Austria

Filed June 5, 1973, Ser. No. 367,149

Claims priority, application Switzerland, June 26, 1972, 9568/72

Int. Cl. H02p *1/46*

U.S. Cl. 318—174 **6 Claims**



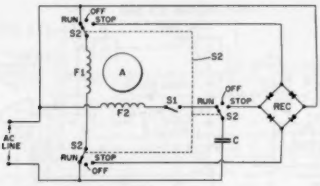
An arrangement for exciting the rotating field winding of a synchronous motor includes an alternating current exciter whose armature is mounted on the motor shaft and delivers direct current to the field winding by means of a main rectifier bridge circuit also mounted on the motor shaft. The negative half of the rectifier bridge consists of controllable semiconductor elements and the positive half of non-controllable type semiconductor elements. The controllable semiconductor elements in the bridge perform in a normal manner during synchronous operation of the motor but means in the form of an auxiliary rectifier arrangement are provided to render them non-conductive during asynchronous starting thus to cut off current flow from the output of the main rectifier bridge to the field winding of the motor.

3,798,523

SINGLE PHASE INDUCTION MOTOR BRAKE

Thomas A. O. Gross, P.O. Lincoln, Concord Rd., Lincoln, Mass.

Filed Mar. 7, 1972, Ser. No. 232,482
Int. Cl. H02p 3/20
U.S. Cl. 318—212 5 Claims



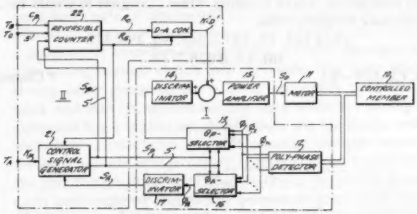
The capacitor in a single phase induction motor is used as a current limiting impedance in a DC braking circuit. The circuit includes the AC source, the capacitor, a rectifier and a field winding.

3,798,524

DIGITAL SERVO COMPRISING MEANS FOR CONTROLLING DRIVING ENERGY IN RESPONSE TO DROOP

Kiyokazu Okamoto, and Hitoshi Tamagawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 20, 1973, Ser. No. 333,471
Claims priority, application Japan, Feb. 19, 1972, 47-17437
Int. Cl. G05b 19/24
U.S. Cl. 318—571 5 Claims



Supplied with driving energy, a digital servo system drives a controlled member with inevitable droop and produces an alarm signal representing whether or not the droop is within a predetermined range. A control pulse generator produces control pulses when the droop is within the range. A reversible counter accumulates an instantaneous number of command pulses supplied to the system in compliance with the sign indicated by a direction command signal also supplied to the system. The control pulses, when produced, reduce the number towards zero. In compliance with the absolute value of the number, the counter adjusts the energy.

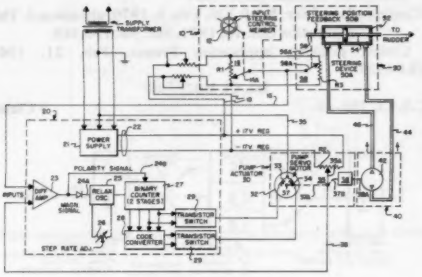
3,798,525

ELECTRO HYDRAULIC STEERING SYSTEM

Herbert G. Cooper, Kalamazoo, Mich., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 18, 1972, Ser. No. 254,398
Int. Cl. G05d 1/00
U.S. Cl. 318—588 9 Claims

An electro-hydraulic system especially adapted for the steering of riverboats and the like according to which accurate control is gained in the steering operation. The system includes a variable volume piston pump under the control of a servo controller so as to produce variable rates of fluid flow from the pump to an output steering device which is operative to effectuate precision steering of the vehicle. A steering device position feedback arrangement is provided according



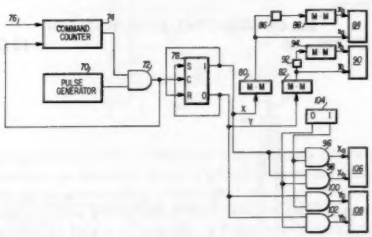
to which a signal is fed back, responsive to movement of the steering device, in such a way as to effectively nullify the initiating signal input to the servo controller, thereby to return the pump to a null position at a time when the steering device has assumed the position desired.

3,798,526

HIGH SPEED STEPPING MOTOR WITH MECHANICAL COMMUTATOR

Yukiharu Takahashi, Yokohama, and Moritada Kubo, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Dec. 30, 1971, Ser. No. 214,306
Claims priority, application Japan, Dec. 31, 1970, 45/123622
Int. Cl. H02k 37/00
U.S. Cl. 318—696 6 Claims



A high speed stepping motor includes a stator having a bore and a plurality of salient poles on which stator windings are wound. A rotor is provided and has a plurality of axial teeth and slots alternatively positioned on a peripheral surface thereof. A plurality of rotor windings are respectively mounted in the slots of the rotor. A commutator is mounted on a shaft of the rotor and has segments which are respectively connected to the rotor windings. Brushes are provided for making contact with the commutator segments to enable electric energy to be supplied to the rotor windings. Means are provided for changing the direction of energization of the stator windings to thereby change the direction of the magnetic field resulting therefrom and for changing the direction of energization of the rotor windings in synchronization therewith.

3,798,527
ELECTROCHEMICAL D.C. CURRENT TRANSFORMER SYSTEM

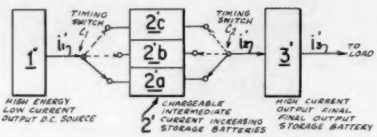
Michel Guy Marie Jochaud Du Plessix, Paris, and Yves Jacques Felix Lecouffe, Courbevoie, both of France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Continuation of Ser. No. 9,526, Feb. 9, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,369

Claims priority, application France, Feb. 21, 1969, 69.04529

Int. Cl. H02j 7/00

U.S. Cl. 320—6 9 Claims



Increasing of direct current of a given intensity from a primary source of high energy and low power is effected via an intermediate direct current stage to current of higher intermediate intensity which stage delivers the intermediate intensity to a terminal storage battery capable of supplying desired higher intensity. The terminal storage battery is effectively charged by the intermediate direct current stage storage battery and the latter is fully and effectively charged by the primary source.

3,798,528
APPARATUS AND METHOD FOR DETECTING THE EVOLUTION OF GAS FROM AN ELECTRIC CELL AND FOR CONTROLLING THE CHARGING OF SAID CELL IN RESPONSE TO SAID DETECTION

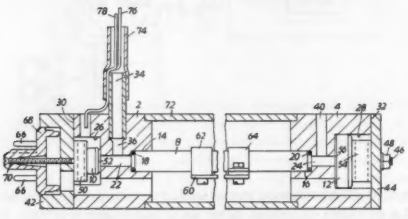
Lindsay Molyneux, 4, Leazes Cres., Newcastle-Upon-Tyne, England

Continuation of Ser. No. 140,043, May 4, 1971, abandoned. This application Nov. 16, 1972, Ser. No. 307,146

Claims priority, application Great Britain, May 5, 1970, 21677/70

Int. Cl. G01n 27/42, 31/00; H02j 7/04

U.S. Cl. 320—46 12 Claims



Apparatus for detecting the evolution of gas, particularly from electric storage cells during charging of the cells, comprises a tube, inlet means for supplying the evolved gas to the tube, and electronic sensing means for detecting changes in the velocity of sound in the tube due to changes in the composition rate of evolution of the gas. In the described embodiment the sensing means consists of a transmitter mounted in the tube and emitting a series of sound pulses, a receiver in the tube spaced from the transmitter, and an electronic circuit for measuring the transit time of sound pulses travelling from the transmitter to the receiver through the gas in the tube.

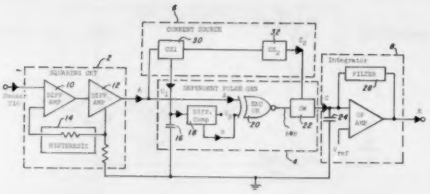
3,798,529
TACHOMETER CIRCUIT

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,410

Int. Cl. H02m 7/00

U.S. Cl. 321—6 11 Claims



An improved frequency to voltage converter utilizes an exclusive OR logic circuit to reduce the number of required capacitors. A squaring circuit provides a first train of squared pulses from a variable frequency input signal, and a pulse generator in response to the first train of pulses generates a time displaced second train of pulses. The first and second pulse trains are combined in an exclusive OR logic combination to thereby generate a third pulse train having controlled pulse widths. The third pulse train is thereupon integrated into a DC signal having mangitude related to and varying with the frequency of the input signal. Preferably first and second tracking current sources control pulse width and pulse height of the third pulse train so as to provide pulses of substantially constant energy to the integrator.

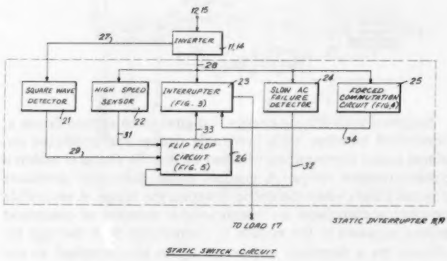
3,798,530
STATIC SWITCH CIRCUIT

Ross Henderson, North Reading, Mass., assignor to Gould Inc., Mendota Heights, Minn.

Filed Oct. 17, 1972, Ser. No. 298,370

Int. Cl. H02h 7/14

U.S. Cl. 321—11 7 Claims



A static switch circuit for switching off a failed inverter of a power supply circuit includes a pair of inverters, each driven by a DC input, and a load supplied by the inverters. The static switch circuit is connected between the inverters and the load and comprises a pair of fault detectors, each having inputs connected to the output of a corresponding one of the inverters and outputs for detecting a fault occuring in the corresponding inverter. Each of a pair of interrupters is connected between the output of the fault detector and the output of the corresponding one of the inverters and the load for instantaneously switching off an inverter in which a fault occurs and is detected by the fault detector. Each of a pair of forced commutated circuits is connected with a corresponding one of the interrupters for reducing the period of time in which the

corresponding interrupter switches off the corresponding inverter.

3,798,531

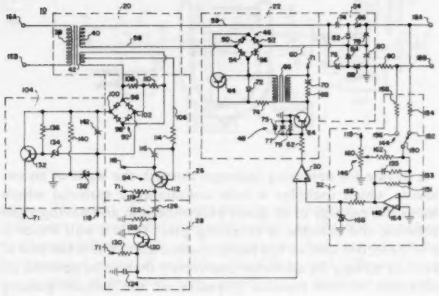
SWITCHING-MODE POWER SUPPLY

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed June 5, 1972, Ser. No. 259,476

Int. Cl. H02m *1/08*

U.S. Cl. 321—18 **11 Claims**



To control the portion of each half cycle of alternating current that is conducted from the transformer to a rectifying voltage multiplier by a feedback-controlled alternating-current switch of a switching-mode power supply, the amplitude of a timing ramp potential which starts with the beginning of each half cycle of alternating current is compared to the amplitude of negative feedback from the power supply output by a differential amplifier that switches a single transistor in the alternating current switch into its conducting state when the timing ramp potential has a lower amplitude than the feedback and into its nonconducting state when the timing ramp potential has a higher amplitude than the feedback, with the transistor controlling the alternating current conducted through a diode bridge circuit connecting the transformer to the rectifying voltage multiplier so that a beginning portion of each half cycle of alternating current is conducted between the transformer and rectifying voltage multiplier until the timing ramp exceeds the feedback in amplitude, whereby the power supply is regulated.

3,798,532

ELECTRON DOUBLE RESONANCE SPECTROMETER WITH A MICROWAVE CAVITY BRIDGE ARRANGEMENT

Karl Hausser, Neuenheimer Landstr. 72, 69 Heidelberg, Germany

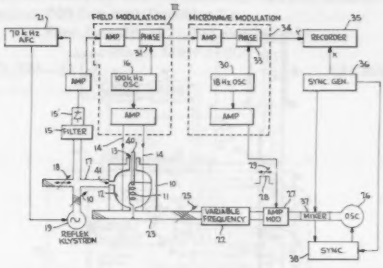
Continuation-in-part of Ser. No. 804,553, March 5, 1969, abandoned. This application June 15, 1971, Ser. No. 153,344

Claims priority, application Germany, Mar. 5, 1968, 1698223

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **7 Claims**

In a spectrometer for measuring electron spin resonances a microwave cavity resonator is excited in a TEM mode such that the direction of the magnetic component of the microwave field is perpendicular to the direction of the magnetic component of a microwave field introduced in the cavity resonator by a helix giving broadband characteristics without tuning. A sample under test may be inserted in the helix for reaction by both the magnetic components of the microwave fields of the resonator and of the helix without interference. A spectrometer system is arranged to provide output spectrum



from measurement of samples in the electron-electron double resonance mode, as well as in other modes.

3,798,533

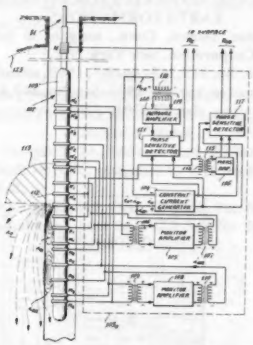
METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,196

Int. Cl. G01v *3/18*

U.S. Cl. 324—10 **4 Claims**



In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth formations surrounding a mud filled borehole without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

3,798,534

METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,199

Int. Cl. G01v *3/18*

U.S. Cl. 324—10 **3 Claims**

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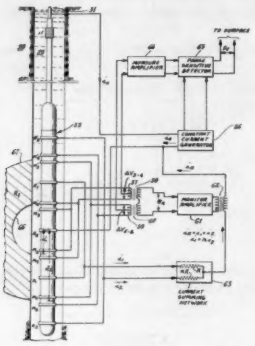
formations surrounding a mud filled borehole without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the



borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

3,798,535

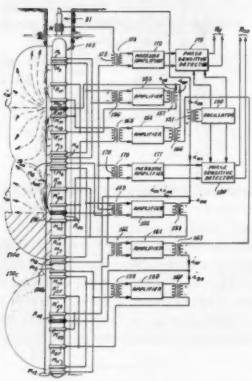
METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,198

Int. Cl. G01v *3/18*

U.S. Cl. 324—10 **5 Claims**



In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth formations surrounding a mud filled borehole without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

3,798,536

DEVICE FOR DETECTING LEAKAGES BY USING HELIUM AS A TRACER GAS

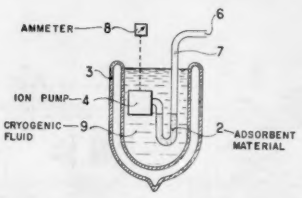
Pierre Maillard, 44 Avenue de la Paix, 44-Donges, and Pierre Roubeau, Place de la Gare de Lozere, 91-Palaiseau, both of France

Filed Mar. 26, 1971, Ser. No. 128,454

Claims priority, application France, Mar. 26, 1970, 7010898

Int. Cl. G01m *3/26;* **G01n** *27/62*

U.S. Cl. 324—33 **1 Claim**



A device for detecting leakages through the walls of an enclosure which includes a tube containing a material which blocks the passage of all gases except helium and having a gas receiving end capable of receiving gases from a wall which is to be detected, and an ion pump connected to the other end of the tube having an ammeter connected thereto to provide an indication of the residual pressure of the helium passing through said material.

3,798,537

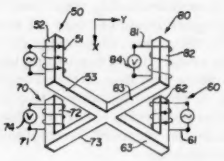
METHOD AND APPARATUS FOR MEASURING STRESSES IN FERROMAGNETIC MATERIAL

John R. Dahm, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 707,793, Feb. 23, 1968, abandoned. This application Dec. 10, 1969, Ser. No. 883,975

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 **13 Claims**



Method and apparatus for measuring stresses in a ferromagnetic material are disclosed. A magnetic means is employed to establish magnetic flux flow paths in a ferromagnetic material in two directions at right angles to one another. Additional means is provided for determining the resultant flux flow developed by said paths whereby the magnitude of a stress applied to the material in one of said two directions is ascertained.

3,798,538

PULSE EDDY CURRENT TESTING APPARATUS WITH RAMP PHASE SHIFTER

Sven E. Mansson, Hollviksnas, Sweden, assignor to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

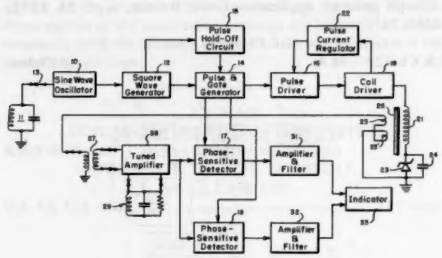
Filed Feb. 22, 1973, Ser. No. 334,960

Int. Cl. G01v *33/12*

U.S. Cl. 324—40 **9 Claims**

Time adjustable pairs of gate pulses for gating phase-sensitive detectors in pulse eddy current testing apparatus are

produced by a ramp generator responsive to pulses corresponding to the driving pulses applied to the test coil assembly, an adjustable level control circuit for changing the DC level of the ramps, a pair of electronic switching circuits which switch at different instantaneous values of the ramps, and means responsive to the switching for producing pairs of gate



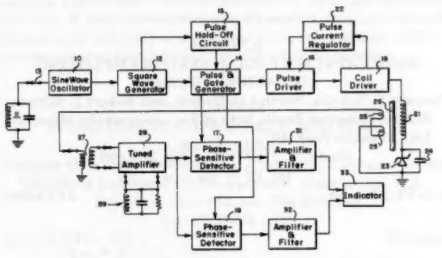
pulses. The pairs of gate pulses may be quadrature-related and their time occurrence shifted with respect to the driving pulses by changing the ramp level. An adjustable clamping circuit for level control, a pair of switching amplifiers, and differentiating the outputs of the switching amplifiers to produce the gate pulses are specifically described.

3,798,539

PULSE EDDY CURRENT TESTING APPARATUS USING PULSES HAVING A 25% DUTY CYCLE WITH GATING AT PULSE EDGES

Robert A. Brooks, Rye, and Paul J. Bebick, Bronx, both of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,874
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 **9 Claims**



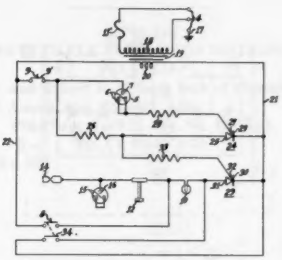
Pulses having a pulse width equal to one-quarter wavelength at a multiple (including 1) of the fundamental frequency of the pulses are applied to the test coil assembly of a pulse eddy current testing apparatus, and the output signals are supplied to an amplifier tuned to said multiple of the fundamental frequency. The output of the amplifier is supplied to a pair of phase-sensitive detectors which are gated at the leading and trailing edges of the applied pulses to produce quadrature signal components. These components are utilized to produce indications of defects or flaws in the object under test. The test coil assembly is advantageously designed to produce an approximately null output in the absence of defects or flaws. The pulses may have a 25 percent duty cycle with the amplifier tuned to the PRF thereof.

3,798,540

ELECTRICAL GROUNDING AND INSULATION RESISTANCE TESTER

Levin D. Darden, P.O. Box 35, Hollister, Fla., and Richard E. Morrison, 509 Bon Ami, Deridder, La.

Filed June 28, 1972, Ser. No. 267,034
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **12 Claims**



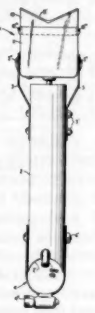
A fail-safe safety testing device for electrical hand tools and the like which automatically indicates that the insulation resistance of the tool and its associated power cord and plug exceeds a predetermined value and that the connection is continuous between the frame of the tool and the grounding prong of the power cord plug by causing an indicating lamp to be illuminated upon concurrence of such conditions. When the tool is unsafe as to either or both of these conditions, the lamp does not light up.

3,798,541

CAPACITIVE PROBE STRUCTURE FOR TESTING THE INTEGRITY OF ELECTRICAL CABLES AND CONDUCTORS

Richard H. Campbell, Jr., Gilford, and William B. Wilkens, Laconia, both of N.H., assignors to Wilcom Products, Inc., Laconia, N.H.

Division of Ser. No. 85,617, Oct. 30, 1970, Pat. No. 3,711,767.
This application June 26, 1972, Ser. No. 266,367
Int. Cl. G01r *31/02, 1/06*
U.S. Cl. 324—72.5 **12 Claims**



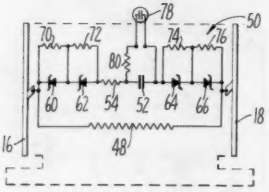
This invention relates to a probe structure designed to be capacitively coupled to an insulated electrical cable or conductor, and which is operative to pick up relatively weak electrical signals induced on or carried by a selected part of the cable or conductor, and to convert said signals into output voltages capable of audible or scientific measurement.

3,798,542

ENERGY MEASURING DEVICE FOR PULSE TYPE DEFIBRILLATORS

Robert H. Dempsey, 2505 Oak St., Napa, Calif.

Continuation-in-part of Ser. No. 27,884, April 13, 1970, abandoned. This application July 5, 1972, Ser. No. 269,057
Int. Cl. G01r 21/00, 19/16
U.S. Cl. 324—133 9 Claims



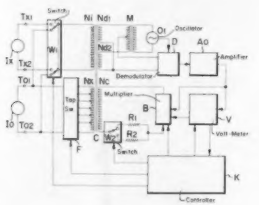
Apparatus and method for testing the energy output of a defibrillator or the like comprising a pair of contacts, a resistance element electrically connected between said contacts, a threshold monitoring device electrically connected between said contacts and parallel with the resistance element, and indicator means electrically connected to the threshold monitoring device for indicating when the energy output of the defibrillator exceeds a predetermined value.

3,798,543

DIRECT CURRENT RATIO MEASURING APPARATUS

Ikuo Takeda; Takashi Suzuki, and Hikaru Furukawa, all of Tokyo, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 81,296, Oct. 16, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,011
Int. Cl. G01r 7/00
U.S. Cl. 324—140 D 2 Claims



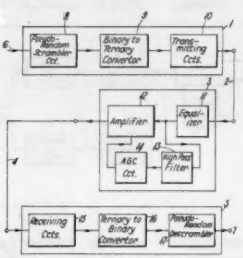
This invention relates to a direct current ratio measuring apparatus wherein the current ratio is determined by first making a reference current and then making an unknown current to be measured flow through an input winding wound on a magnetic core of high magnetic permeability and in each case automatically cancelling out the flux in the core by introducing cancelling currents into another winding on the core, these cancelling currents being measurable to determine the ratio without introducing errors therein as occurs if an attempt is made to directly measure the reference and unknown currents.

3,798,544

MULTILEVEL PCM SYSTEM ENABLING AGC CONTROL OF A TRANSMITTED MULTILEVEL SIGNAL IN ANY SELECTED FREQUENCY PORTION OF SAID TRANSMITTED SIGNAL

Peter Norman, Dartford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,148
Claims priority, application Great Britain, Sept. 23, 1971, 44389/71
Int. Cl. H04b 1/00
U.S. Cl. 325—38 A 4 Claims



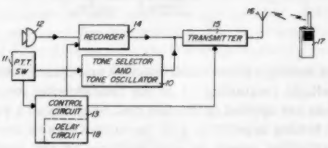
This relates to a PCM system having a substantially constant power amplitude distributed throughout the frequency spectrum of a digital signal. This enables selecting a suitable portion of the spectrum of the digital signal for operation of the AGC circuits of the system, particularly those AGC circuits contained in predetermined ones of repeater incorporated in the system. To accomplish this, the system includes, in the transmitter, a pseudo-random scrambler operating on a binary signal input to provide the substantially constant power amplitude distributed throughout the frequency spectrum of the input binary signal. The output signal of the scrambler is converted to a ternary signal prior to transmission. At the receiver the ternary input signal is converted to a binary signal. The binary signal at the output of the last converter is descrambled to compensate for the scrambling of the scrambler and to produce a replica of the binary input to the system.

3,798,545

HIGH CAPACITY PAGING SYSTEM EMPLOYING SUBAUDIBLE TONES

Norman E. Schultz, North Lauderdale, and Robert J. Schwendeman, Pompano Beach, both of Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 7, 1972, Ser. No. 224,199
Int. Cl. H04b 5/04
U.S. Cl. 325—55 24 Claims



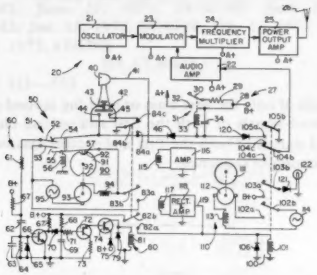
A high capacity paging system includes a transmitter for transmitting a modulated signal in response to a message including address signals followed by audio signals. Each transmission is initiated by actuating the switch and terminated by deactuating the switch. Control circuitry is operative in response to the switch actuation to actuate the transmitter. The control circuitry includes time delay circuitry for holding the control circuitry operative for a first predetermined time

period after deactuation of the switch. Address circuitry develops the address signals and is operative in response to actuation of the switch to couple the address signals to the transmitter for a second predetermined time period no greater than the first predetermined time period. Audio delay circuitry is operative in response to operation of the control circuitry to delay audio signals coupled from a microphone by the first predetermined time period and couple the delayed audio signals to the transmitter for transmission thereby. The address signals of the succeeding message are transmitted simultaneously with the terminal portion of the audio signals in the preceding message.

3,798,546
AUTOMATIC IDENTIFICATION SYSTEM

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr.

Filed Nov. 8, 1971, Ser. No. 196,315
Int. Cl. H04h *1/00*
U.S. Cl. 325—166 **27 Claims**

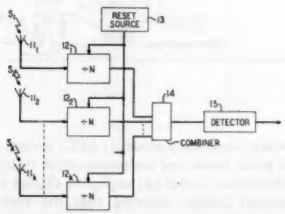


A microphone and a reproducing means are coupled to the modulator of a transmitter. A switch, when actuated to a first position, energizes the transmitter power supply to produce a carrier wave which can be modulated by the user's voice. A holding circuit is provided, so that, when the user releases the switch, the transmitter power supply remains energized so as not to interrupt the carrier wave. Then, a secondary message, such as a set of call letters, automatically modulates the carrier wave. A timer mechanism may be provided to cause the call letters to be sent only after the first voice transmission within a predetermined time interval, such as 15 or 30 minutes.

3,798,547
APPROXIMATE COPHASING FOR DIVERSITY RECEIVERS

Douglas Otto John Reudink, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1972, Ser. No. 319,552
Int. Cl. H04b *1/06*
U.S. Cl. 325—305 **8 Claims**

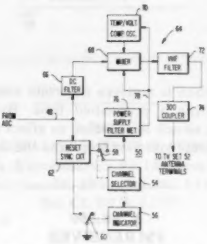


In a predetection combining diversity receiver approximate cophasing of the individual receptions is temporarily achieved by frequency division of the received signals. These signals, which contain independent phase angles so that any two may be randomly out-of-phase, are each applied to identical frequency division circuits. By dividing each carrier frequency by the factor, N, common to all of the dividing circuits, all of the signals will be initially phased within $\pm \pi/N$ radians. In time, the effect of random phase variations may cause the approximately cophased signals to drift apart. Therefore, the frequency dividing circuits are periodically reset to reestablish approximate cophasing.

3,798,548
DISCRETE CABLE TELEVISION DISTRIBUTION SYSTEM

Paul White, and Robert H. Wilson, both of Phoenix, Ariz., assignors to Ameco, Inc., Phoenix, Ariz.

Filed Sept. 8, 1971, Ser. No. 178,693
Int. Cl. H04b *1/06*
U.S. Cl. 325—309 **24 Claims**



Disclosed is a channel selection and synchronizing mechanism for a Cable Television Distribution System. The system employs a number of main distribution cables each carrying at most three programs within a single relatively low frequency band, and a number of area distribution centers (ADC's). A single communication path connects each subscriber station to one of the ADC's while switching circuitry controlled by the subscriber selectively connects the communication path to the desired one of the cables. Frequency conversion at the subscriber station shifts the incoming band to one of the clear local channels. The selector mechanism includes switching means for providing pulse signals over the communication path for channel selection and synchronization of the switching equipment. A channel selection display is provided by an indicia bearing loop which includes means for operating the synchronizing signal generator. For multiple programs on each distribution cable the selector includes switching means for actuating selective frequency conversion circuitry for converting incoming programs in different frequency transmission bands to the frequency of one of the locally unassigned standard channels.

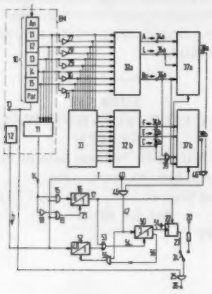
3,798,549
APPARATUS FOR TRANSMITTING DATA OVER RADIO CONNECTIONS

Max Ollinger; Wernhard Markwitz, both of Munich; Dieter Niethammer, Unterhaching, and Oddvar Kvale, Sagdalsveien, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 13, 1972, Ser. No. 243,586
Claims priority, application Germany, Apr. 21, 1971, 2119489
Int. Cl. H04l *3/02*
U.S. Cl. 325—322 **8 Claims**

Circuitry is described which facilitates data transmission over radio links by preventing receiver errors, even when call addresses are distorted. The incoming call addresses consisting of several characters are applied to transmission lines, one of which is assigned to each character. The latter character lines are connected to a character counter, over an output of

which a call address signal is emitted when all characters of a given call address are received in proper succession. The call address is coupled to an address counter which emits a



counter signal when it receives a certain number of call address signals within a prescribed time. By means of this counter signal, a switch is operated to effect the transmission of the received data from the receiver to the data terminal.

3,798,550

FM RECEIVER

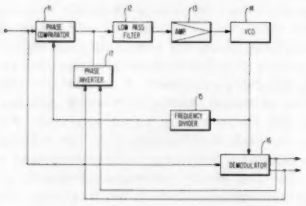
Saburo Takaoka, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,210

Claims priority, application Japan, Dec. 8, 1971, 45-099270

Int. Cl. H04b 1/06

U.S. Cl. 325—346 **3 Claims**



A portion of a demodulated signal derived from a demodulator circuit, in an FM receiver having a phase locked loop to generate a subcarrier, is phase-inverted and applied to counterbalance demodulation components generated by a phase comparator circuit of the phase locked loop.

3,798,551

MULTIPLEXED SIGNAL-SEQUENCE CONTROL SYSTEM

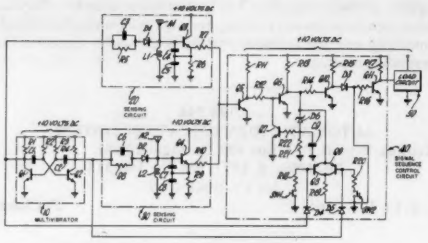
Arthur F. Cake, Smithtown, N.Y., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Sept. 15, 1972, Ser. No. 289,573

Int. Cl. H04b 1/06

U.S. Cl. 325—370 **17 Claims**

A plurality of capacitance-responsive sensor circuits are alternately energized by a free-running multivibrator and generate signals of a first class when a person is detected. The multivibrator also alternately enables a signal-sequence control circuit to sense one of a second class of input signals and to generate a control signal in response to either (1) one or



more signals of only the first class or only the second class, or (2) unrelated signals of both the first and second classes, or (3) related signals of both the first and second classes occurring in an improper sequence.

3,798,552

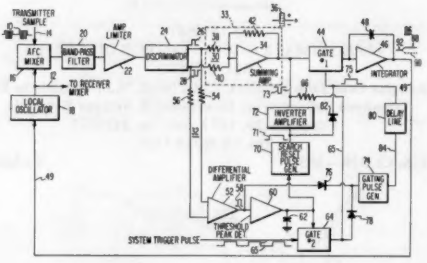
AUTOMATIC FREQUENCY CONTROL FOR PULSE RADAR AND COMMUNICATION SYSTEMS

John Harry Pratt, Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,900

Int. Cl. H04b 1/16

U.S. Cl. 325—420 **10 Claims**



An automatic frequency control (AFC) system particularly suitable for pulse radar and communication systems with improved performance in that (*a*) negligible change in frequency occurs between pulses, assuring that the received signal remains centered in the receiver pass band during the entire receive period, (*b*) the center of the main lobe of the transmitter spectrum is used as the reference by gating out the rising and falling portions of the transmitter pulse where the

frequency may be changing, and (*c*) the system cannot lock near the "image" frequency where the local oscillator is on the wrong side of the transmitter frequency and the receiver is mistuned.

3,798,553
FREQUENCY SWEEP DEVICE HAVING TWO ALTERNATELY SWEPT OSCILLATORS

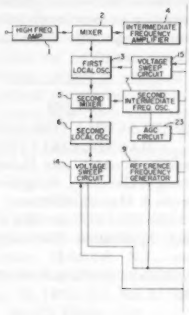
Yoichi Sakamoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Osaka, Japan

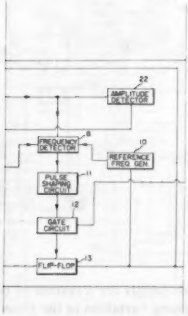
Filed Feb. 8, 1972, Ser. No. 224,454

Claims priority, application Japan, Feb. 9, 1971, 46/5738; Feb. 9, 1971, 46/5739; Feb. 9, 1971, 46/5740; Feb. 9, 1971, 46/5741; Feb. 9, 1971, 46/5742; Feb. 9, 1971, 46/5743; Feb. 9, 1971, 46/5745; Feb. 9, 1971, 46/5753; Mar. 3, 1971, 46/11430; Mar. 3, 1971, 46/11431; Mar. 3, 1971, 46/11432; Mar. 5, 1971, 46/11900; Mar. 5, 1971, 46/11901; Mar. 5, 1971, 46/11902; June 25, 1971, 46/46140; June 25, 1971, 46/46141; June 25, 1971, 46/46142; June 25, 1971, 46/46143; Jan. 13, 1972, 47/6300; Jan. 13, 1972, 47/6301; Jan. 13, 1972, 47/6302

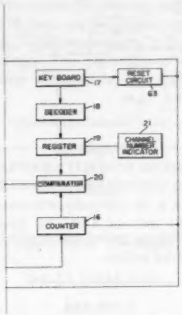
Int. Cl. H04b *1/16*

U.S. Cl. 325—453 **21 Claims**





The frequency sweep operation by two frequency sweep oscillators is reversed whenever the difference in oscillation frequency between the two oscillators reaches a predetermined frequency so that they alternately sweep the frequency step by step. The frequency sweep oscillator device is best



suited for use in an automatic channel selector for a television receiver.

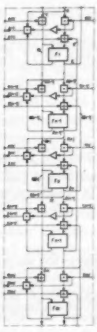
3,798,554
DIGITAL SEQUENTIAL CIRCUIT

Zbigniew Sadlak, Komandorska 82/14, Wroclaw, Poland

Filed Dec. 29, 1971, Ser. No. 213,321

Int. Cl. H03k *21/00*

U.S. Cl. 328—43 **3 Claims**



A multi-state digital sequential circuit of unified logic elements provided for sequential testing of single-bit signals and passing into selected states or producing single-bit output signals according to arbitrarily present algorithm. The circuit consists of a plurality of unified elements comprising interconnected flip-flops, inverters, AND-circuits, and OR circuits.

3,798,555
PULSE RECOVERY SYSTEM

John A. Tempka, Glenview, and Elwood C. Reichart, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

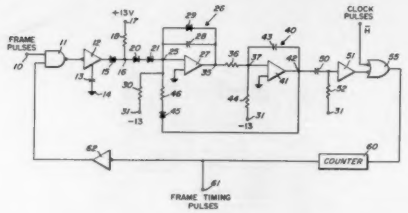
Filed Nov. 16, 1972, Ser. No. 307,257

Int. Cl. H03k *3/64*

U.S. Cl. 328—74 **5 Claims**

Received pulses and recovered or internally produced pulses are applied to a coincidence gate the output of which is applied to an integrator. The output of the integrator, which gradually increases in amplitude during non-coincidence, is applied to a comparator that operates to produce an output signal when the output of the integrator reaches a predetermined amplitude. The output of the comparator is dif-

ferentiated to produce pulses and applied to an OR gate along with internally generated clock pulses. The clock pulses with



the interspersed additional pulses are applied to a counter that produces the recovered pulses.

3,798,556

METHOD FOR DETECTING MUTUAL HIGHER AND LOWER REVOLUTIONAL SPEEDS OF A PLURALITY AMONG ROTATING MEMBERS

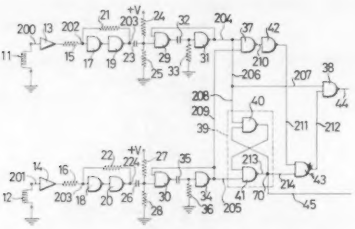
Junichiro Ooya; Katsuki Takayama, and Kazutaka Kuwana, all of Kariya, Japan, assignors to Aisen Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Dec. 15, 1971, Ser. No. 208,149

Claims priority, application Japan, Dec. 15, 1970, 45-112234; Dec. 15, 1970, 45-112235

Int. Cl. H03d *13/00*

U.S. Cl. 328—133 **6 Claims**



A method and apparatus for determining the relationship of the speed of rotation of two members in which one member rotates at a greater speed than the other. A series of pulses proportional to the speed of rotation of each member are generated and applied through a logic circuit to a bistable circuit. The logic circuit is such that it switches the state of the bistable circuit upon the occurrence of a rising edge (or falling edge) of one pulse in the first series followed by a rising edge (or falling edge) of a pulse in the second series.

3,798,557

INTERPOLATION OF SINUSOIDAL SIGNALS

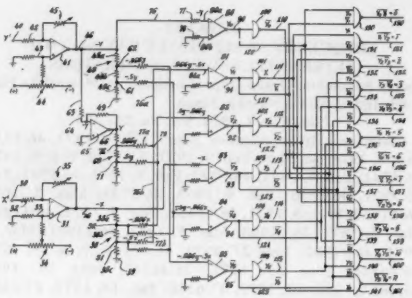
Larkin B. Scott, Fort Worth, Tex., and George Roth, Stamford, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 31, 1972, Ser. No. 239,932

Int. Cl. H03b *3/04*

U.S. Cl. 328—133 **7 Claims**

An interpolating system particularly adapted to obtain finer resolution in the readout of a pair of sinusoidal signals in quadrature, utilizing zero-crossing detecting techniques. The system retains the information as to which of the two signals leads the other. In the specific embodiment twelve evenly spaced, resolved elements (in the form of logic signals) are produced for each original full cycle of the signals, while retaining the advantage of the zero-crossing detection technique, e.g., insensitivity to (simultaneous) amplitude changes in both quadrature signals. The system preferably operates on a pair of pure A. C. sinusoidal waves (i.e., free of any D.C. component) each having equal (even if simultaneously varying) amplitude, but can be used on any pair of signals from which such equal amplitude pure sine waves in



quadrature can be extracted. One field of use is in processing signals from distance-measuring interferometers, so as to obtain a more finely resolved distance measurement of the object being monitored (e.g., in units of 1/24 of the wavelength of radiation, where a whole cycle of the sinusoidal signals corresponds to ½ of a wavelength).

3,798,558

TIMING CURRENT SUPPLY FOR A SYSTEM OF TWO CHANNEL CIRCUITS

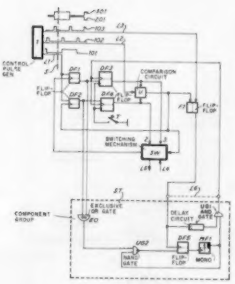
Gerd Kopperschmidt, Weddel, and Heinz-Jurgen Lohmann, Branschweig, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 13, 1972, Ser. No. 271,507

Claims priority, application Germany, July 16, 1971, 2135683

Int. Cl. H03b *1/00*; **H03k** *5/00*; **H04b** *1/10*

U.S. Cl. 328—163 **4 Claims**



A timing current supply for a system of two channel circuits using binary switching variables in the form of two rectangular signal voltages of equal frequency in amplitude and 180° phase difference for the two values. Control devices for the anti-phase control on both channels help to switch off data, independently of data flow, during a condition of anti-valence interference. The system operates in the manner of a dynamic self holding circuit during an anti-phase condition.

3,798,559

NOISE REDUCTION SYSTEM

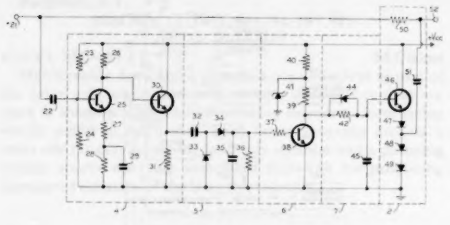
Masao Tomita, Katano, and Kiyoji Fujisawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1972, Ser. No. 244,558

Claims priority, application Japan, Apr. 20, 1971, 46-25892; Aug. 10, 1971, 46-60737

Int. Cl. H03f *1/26*; H03g *1/04*

U.S. Cl. 328—167 11 Claims



A noise reduction system which has a switching circuit, a charge-and-discharge circuit and a variable gain amplifier. When the input signal is lower than a predetermined threshold level, the charge-and-discharge circuit is changed to charging operation by the switching circuit and a control voltage is applied to the variable resistance means, whereby the resistance thereof is decreased and the input signal is attenuated. When the input signal exceeds the predetermined threshold level, the charge-and-discharge circuit is changed to discharging operation and the control voltage becomes zero, so that the input signal is not attenuated since the variable resistance means has a small resistance. Accordingly, the input noises can be removed during a pause in the input signal.

3,798,560

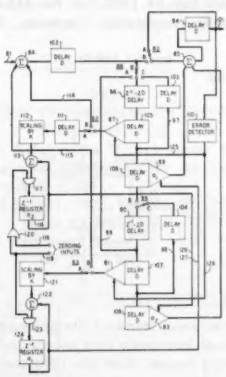
ADAPTIVE TRANSVERSAL EQUALIZER USING A TIME-MULTIPLEXED SECOND-ORDER DIGITAL FILTER

Michael Gordon Taylor, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1973, Ser. No. 327,622

Int. Cl. H03h *7/14*

U.S. Cl. 328—167 7 Claims



A second-order digital filter arrangement having output taps from each of two first-order subsections and a pair of adjustable gain devices connected at each tap is modified by providing reentrant connections around the entire filter and also its first-order subsections to perform the function of a nonrecursive multitap transversal equalizer. One of each pair of gain devices serves as a forward-feeding tap signal multiplier. The remaining one of each pair of gain devices serves as a correlator for tap and error signals to adjust the gain of a tap signal multiplier. Memories for storing output signals and updated tap gain coefficients are programmed on a time-division basis while message signals are being circulated through the digital filter subsections. The capability of reconversion to the recursive digital-filter form under program control is at all times preserved.

3,798,561

METHOD AND APPARATUS FOR DEMODULATION OF PHASE DIFFERENCE MODULATED DATA SIGNALS

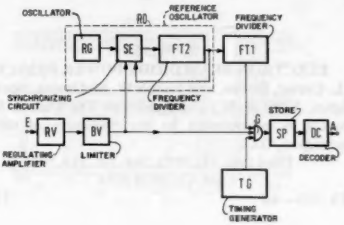
Peter Bocker, Vinzenz-Schupfer-Str. 38, 8 Munich, Germany

Filed Sept. 24, 1971, Ser. No. 183,570

Claims priority, application Germany, Sept. 24, 1970, 2047183

Int. Cl. H03d *3/18*

U.S. Cl. 329—104 5 Claims



A method and apparatus are described for demodulating phase difference modulated signals wherein a carrier is modulated by specific, different valued phase shifts corresponding to the various levels of the data signal. Mean value-coherent demodulation is used wherein the transmitted predetermined interval and the phase resulting from the phases received up to that time as the mean value for the preceding predetermined interval. A reference frequency is generated which includes all the possible phase values for the data. A pulse is triggered by a crossover of the carrier signal during the predetermined interval. At the time of the latter crossover, the phase of the received signal is compared with the mean value of phase values received during preceding predetermined intervals. A decoder is provided which, according to the coding used, forms the transmitted data signal from the aforementioned difference information.

3,798,562

EXPANDING CIRCUIT IN A COMPRESSION AND EXPANSION SYSTEM

Nobuaki Takahashi, Yamato; Masao Kasuga, Sagamihara; Nobuhide Ohsaki, Yokohama; Yashuhisa Okabe, Zama, and Hiromo Sekiguchi, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 2, 1972, Ser. No. 294,356

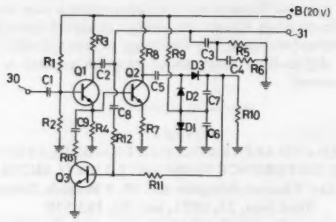
Claims priority, application Japan, Oct. 5, 1971, 46-77532; Apr. 18, 1972, 47-38941

Int. Cl. H03g *3/30*

U.S. Cl. 330—28 10 Claims

An expanding circuit is provided for a compression and expansion system. It operates to expand signals compressed in the compression system responsive to a control system of two loops, with respect to the medium-frequency component and the high-frequency component of the signals transmitted to the expanding circuit. The expanding circuit has a control system of only a single loop for varying the gain an input signal by means of control signals obtained in accordance with the levels of the medium-frequency band and the high-frequency

band. An attenuation circuit imparts to signals of gains thus varied, characteristics whereby the level of the high-frequency



band is attenuated more than that of the medium-frequency band.

3,798,563

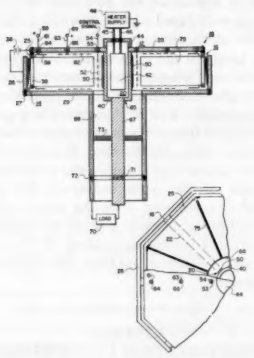
ELECTRON BEAM DIODE POWER DEVICE

John L. Carter, Ocean, and Joseph W. McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 12, 1972, Ser. No. 314,301

Int. Cl. H03f 3/54

U.S. Cl. 330—44 **11 Claims**



An electron beam semiconductor amplifier tube having a plurality of spaced groups of serially connected back-biased semiconductor diodes mounted near the periphery of a radial waveguide transmission line. Each group of diodes is bombarded by a corresponding distinct electron beam emanating from one of several angularly spaced emissive regions of a cathode disposed at the center of the radial transmission line. The several groups of diodes are arranged in parallel. A radial wave generated by the current induced in the several diodes by the corresponding impinging electron beam propagates toward the center of the radial transmission line and, thence, to a load of typical impedance. The radial wave can be transformed into a TEM wave and propagated along a coaxial line having the center conductor thereof mounted along the central axis of the tube — which axis passes through the cathode and the center of the radial transmission line.

3,798,564

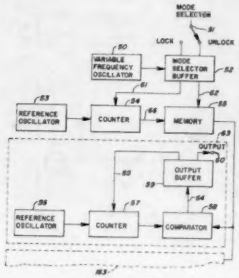
DIGITAL FREQUENCY MULTIPLIER

J. Michael Langham, 1920 Plum St., Peru, Ill.

Division of Ser. No. 121,837, March 8, 1971, Pat. No. 3,675,146. This application Apr. 18, 1972, Ser. No. 245,059The portion of the term of this patent subsequent to July 4, 1989, has been disclaimed.

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A **5 Claims**



A plural oscillator system with all the characteristics of an analog or variable frequency oscillator, but with the added capability of locking digitally to any frequency within its range. The system has two modes of operation, unlocked and locked. In the unlocked mode, the system employs a variable frequency oscillator together with a reference oscillator and counter to produce the system output and to log the period of the variable frequency oscillator into a memory. In the locked mode, the contents of the memory are held constant, and the variable frequency oscillator no longer drives the system output. Instead, the reference oscillator and counter are used in conjunction with a digital comparator to produce the system output with a frequency determined by the contents of the memory. Thus, the system in the locked mode operates as a digital oscillator at the frequency that the variable frequency oscillator operated before the mode change.

3,798,565

GAS CELL ATOMIC FREQUENCY STANDARD OF COMPACT DESIGN

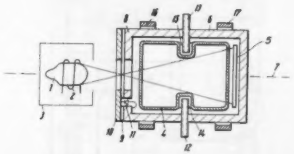
Ernst Jechart, Ishertstrasse 2, 8 Munich, Germany

Filed Dec. 14, 1972, Ser. No. 315,035

Claims priority, application Germany, Dec. 14, 1971, 2162050

Int. Cl. H03b 3/12

U.S. Cl. 331—94 **14 Claims**



An atomic frequency standard comprising a cell arranged in the radiation path between a light source and a light sensitive signal generating means. Both the light source and the cell contain alkali metal vapor. A cavity resonator surrounds the cell. Means are provided for coupling one resonator to a frequency controllable oscillator. Means for applying a static homogenous magnetic field to the cell are also provided. The device contains an oscillator feedback control system responsive to the increased light absorption occurring when resona-

tor oscillations coincide with an electron transition of the alkali metal. The cell substantially completely fills the cavity resonator and follows its contours. At least one concavity is provided on the cell wall into which a projection extends to promote stable oscillation modes within the cell.

3,798,566

POLYMETHINE DYE LASERS

William C. McColgin, and Frank G. Webster, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,892
Int. Cl. H01s *3/20*
U.S. Cl. 331—94.5 L **15 Claims**

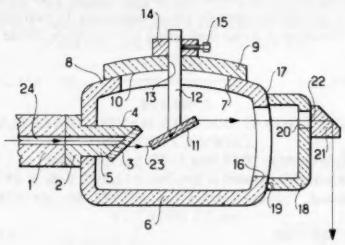
Merocyanine dyes which contain a pyran nucleus as part of the intercyclic chain are useful as laser dyes. These dyes are used in solution with a non-interfering solvent to form lasing media useful in dye lasers. Such lasers generally include a reservoir for containing the laser dye solution and a pumping energy source operably associated therewith for producing stimulated emission of the laser dye solution.

3,798,567

LASER GENERATOR

Regis De Wavrechin, Ivry-sur-Seine, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed June 21, 1972, Ser. No. 265,038
Claims priority, application France, June 23, 1971, 71.22886
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **3 Claims**



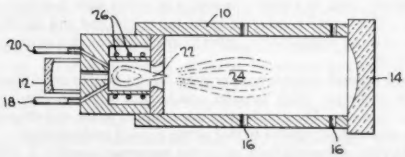
The positions of the reflector and the optical element are regulated with respect to the active medium through a sleeve which surrounds a portion of the optical resonant cavity of a laser generator.

3,798,568

ATMOSPHERIC PRESSURE INDUCTION PLASMA LASER SOURCE

Colin S. Willett, Keedysville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 31, 1972, Ser. No. 276,544
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **4 Claims**



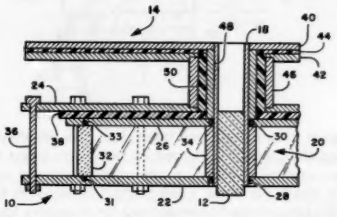
An atmospheric pressure induction plasma laser source which enables high power, large diameter laser systems to be operated at atmospheric pressures in materials having high melting points and which can be selectively excited in charge transfer or Penning reactions. The disclosed apparatus provides a non-molecular laser that is operable at atmospheric pressure in a structure open to the atmospheric or in a circulatory system. It also will enable laser oscillation to be realized in elements and compounds that have heretofore been unable to lase due to their difficulty in vaporizing at reasonable temperatures.

3,798,569

HIGH ENERGY OPTICAL LASER

Nordin C. Anderholm, and Garth W. Gobeli, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 15, 1973, Ser. No. 341,450
Int. Cl. H01s *3/09, 3/02*
U.S. Cl. 331—94.5 **4 Claims**



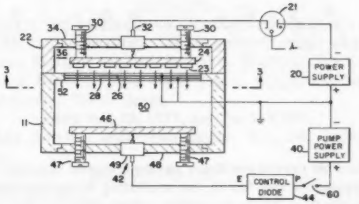
A high energy optical laser which utilizes a coaxial pumping scheme having greater diameter than length coupled through a coaxial transmission line and a planar transmission line to a high energy power source to induce a very high energy optical discharge at a wavelength in the pumping band of a lasing material.

3,798,570

LASER SYSTEM INCORPORATING A FIELD EFFECT EMITTER

Jerry W. Hagood; Charles M. Cason, III, and Joe Shelton, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1973, Ser. No. 346,200
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **9 Claims**



An improved laser system is provided which increases laser efficiency, reduces power consumption and affords simplified construction. The improved laser, which can include any one of several electric pulsed systems, is capable of operating over an extended energy and duty cycle range. In operation only the electrical energy that contributes to the lasing action is drained from the energy source, thus greatly increasing the efficiency of the overall system. A mechanically biasable field effect electron emitter functions as either an active part of the

laser or as an adjustable current controlling device, for controlling the period of lasing action.

3,798,571

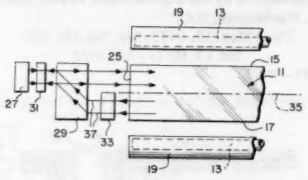
SLAB LASER SYSTEM WITH MEANS TO OVERCOME THE POSITIVE LENS EFFECT CAUSED BY THE THERMAL GRADIENT IN THE LASER ROD

Joseph P. Segre, Acton, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 9, 1969, Ser. No. 831,657

Int. Cl. H01s *3/05*

U.S. Cl. 331—94.5 T **14 Claims**



In a glass laser system, the laser glass is in the shape of an elongated slab, which is excited by being irradiated through the larger sidewalls thereof. A calcite block plate in combination with quarter and half wave plates laterally shift the laser rays in the laser cavity to compensate for a positive lens effect caused by one dimensional thermal gradient in the laser glass. The calcite block and quarter and half wave plates also function to polarize the laser rays to have their E vectors parallel with the larger sidewalls of the slab.

3,798,572

TUNABLE CRYSTAL OSCILLATOR

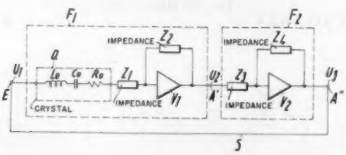
Reinhold Weiss, Berlin, Germany, assignor to Krone GmbH, Berlin, Germany

Filed Dec. 29, 1972, Ser. No. 319,601

Claims priority, application Germany, Dec. 30, 1971, 2165745

Int. Cl. H03b *5/32*

U.S. Cl. 331—108 D **18 Claims**



A tunable crystal oscillator having a crystal operated in series resonance and having an oscillating frequency which is detunable in a given frequency range close to the natural frequency of the crystal by means of at least one variable impedance component. The crystal is connected in series with a first operational amplifier having a feedback branch, the output of the first amplifier being coupled to the input of a second operational amplifier. The output of the second amplifier is connected to that terminal of the crystal which is in opposed connection to the first operational amplifier. The crystal oscillator is arranged to satisfy a Laplace transformed differential equation derived from the network of the crystal oscillator, the two amplifiers and associated circuit components.

3,798,573

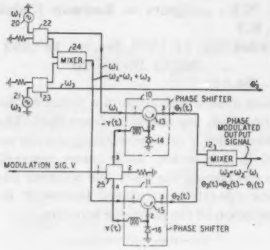
PHASE MODULATOR USING A FREQUENCY MIXING PROCESS

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1973, Ser. No. 342,174

Int. Cl. H03c *3/22*

U.S. Cl. 332—16 R **3 Claims**



This application discloses a phase modulator comprising a plurality of phase shifters whose output are coupled to a frequency mixer. Carrier signals at different frequencies are applied to the phase shifters along with modulating signals derived from a common source. The resulting phase modulation impressed upon the output signal extracted from the mixer is related to the phases of the input signals to the mixer in the same way as the frequency of the output signal is related to the frequencies of the several input signals. This technique is used to synthesize specific phase functions. In particular, an arcsine function is generated using two varactor diode phase shifters.

3,798,574

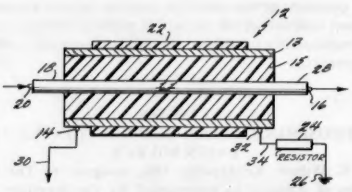
DIRECTIONAL COUPLER HAVING DIRECTLY CONNECTED TAPS

Lester J. Workman, P.O. Box 5547, Sarasota, Fla.

Continuation-in-part of Ser. No. 112,297, Feb. 3, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 278,025

Int. Cl. H01p *5/14*

U.S. Cl. 333—10 **16 Claims**



There has been provided an improved directional coupler adapted to be utilized with an electrical distribution line. In a first embodiment a section of coaxial conductor is utilized generally with its center conductor in series with distribution line and its outer conductor as the tap at one end and its other end of outer conductor coupled to ground through a matching resistor.

In a second embodiment printed circuit boards are utilized with relatively short parallel conductors with an insulator therebetween. The conductors are coupled in the distribution line in a manner similar to that of the coaxial embodiment.

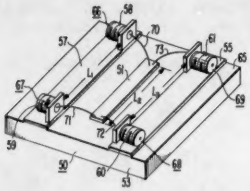
Thirdly a combination of a flat response coupler is connected with either of the above couplers, which have a tilted response, yielding a configuration having tailorable output of controlled gradient.

3,798,575

MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS

Robert Eugene De Brecht, Cranbury, and Louis Sebastian Napoli, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,087
Int. Cl. H01p 5/14, 3/08
U.S. Cl. 333—10 8 Claims



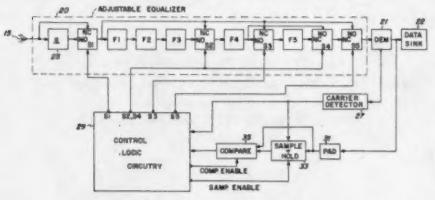
Three coplanar conductive surfaces on the top surface of a dielectric substrate form a microwave transmission line having first and second transmission modes used in the construction and operation of various microwave devices, such as amplifiers and directional couplers.

3,798,576

AUTOMATIC EQUALIZATION METHOD AND APPARATUS

John D. Torpie, Penfield; Allan J. Bell, Fairport; Michael L. Gorham, Rochester, and Walter G. Keating, Baldwinsville, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,146
Int. Cl. H04b 3/04
U.S. Cl. 333—18 34 Claims



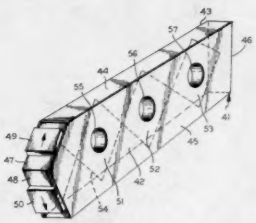
This invention relates to a method of and an apparatus for providing equalization to frequency dependent delay and amplitude distortions in a transmission line. The apparatus includes an adjustable equalizer having a plurality of delay networks, an amplifier, a peak-to-average difference detector, and a control logic for selectively switching the delay networks and amplifier into and out of the path for the incoming signal. Adjustment of the equalizer to a given transmission line is carried out under the control of the control logic and in response to peak-to-average difference signals supplied by the detector. To that end, a train of test pulses is transmitted to the equalizer via the transmission line, and the delay networks and amplifier are selectively switched into and out of the signal path in timed synchronism with successive ones of those pulses, thereby providing different combinations of phase and/or amplitude compensation for such pulses. The peak-to-average difference detector responds to the compensated pulses to identify the particular delay network or delay network/amplifier combination that best compensates for the distortion introduced by the transmission line, and the control logic locks that combination into the signal path. In the case where the equalizer is used in an FM transmission system, it is interposed between the transmission line and the FM demodulator so that the equalization takes place prior to the recovery of the demodulated baseband signal.

3,798,577

ULTRASONIC DELAY LINE

Yukio Kasahara; Takashi Iguchi; Masanari Mikoda, and Isao Ueno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 15, 1972, Ser. No. 253,116
Claims priority, application Japan, May 14, 1971, 46-32849; Mar. 6, 1972, 47-23371
Int. Cl. H03h 9/30
U.S. Cl. 333—30 R 10 Claims



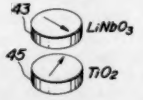
An ultrasonic delay line having an ultrasonic beam path with a plurality, preferably seven, reflection points, and comprising a body of lead silicate glass and a transmitting transducer and a receiving transducer. The body has top and bottom major surfaces substantially parallel to each other, first and second side surfaces which are substantially rectangular in shape and substantially at right angles to the top and bottom major surfaces, a third side surface substantially at a right angle to both the top major surface and the first side surface, a fourth side surface which is substantially at an angle of 135° to the first side surface and supporting either the transmitting transducer or the receiving transducer thereon, and a fifth side surface substantially at an angle of 135° to the second side surface and supporting the other of the transmitting and the receiving transducers thereon. In the preferred form, the medium has a shape such that the length of the first and second side surfaces is about three times the length of the third side surface. The medium may have, at a portion adjacent the ultrasonic beam path, at least one hole and at least one diffusion layer zone which has a lower mechanical Q than that of the ultrasonic beam path, and said hole may have an inner wall provided with an ultrasonic adsorber.

3,798,578

TEMPERATURE COMPENSATED FREQUENCY STABILIZED COMPOSITE DIELECTRIC RESONATOR

Yoshihiro Konishi, Sagamihara; Norio Hoshino, and Yosuke Takano, both of Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Nov. 18, 1971, Ser. No. 199,888
Claims priority, application Japan, Nov. 26, 1970, 45-103634
Int. Cl. H01p 1/30, 7/00
U.S. Cl. 333—83 T 14 Claims



A composite dielectric resonator having stabilized resonant frequency against the variation of ambient temperature, comprising two kinds of low attenuation dielectric elements each

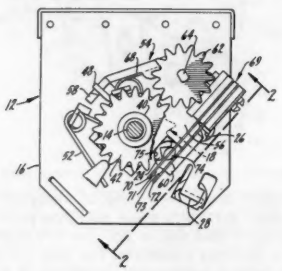
having the temperature coefficient of the dielectric constant in opposite signs. The two dielectric elements are coupled together so that the contact surface is extending substantially parallel to the vector direction of the high frequency electric field. Further improvement of the resonator for obtaining fine adjustment facility is achieved by providing at least an adjustable element, such as a metal post closely arranged to the resonator element for adjusting the electromagnetic energy in the resonator.

3,798,579

AFC DEFEAT FOR TELEVISION TUBES

Henry H. Tap, Cary, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Jan. 17, 1973, Ser. No. 324,552
Int. Cl. H03j *5/02*
U.S. Cl. 334—52 **9 Claims**



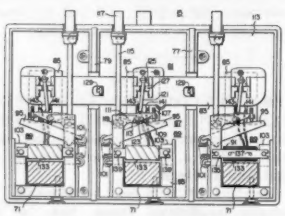
An AFC defeat for a television tuner that provides means for defeating an AFC circuit during channel selection and fine tuning.

3,798,580

CIRCUIT INTERRUPTER WITH INDUCTION TYPE TRIP UNIT

Albert R. Cellerini, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1973, Ser. No. 339,671
Int. Cl. H01h *77/04*
U.S. Cl. 335—37 **9 Claims**



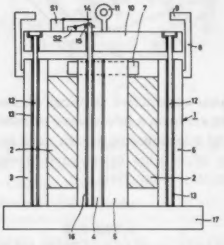
An improved circuit breaker of the type characterized by an enclosed protective device for responding to abnormal currents in the conductors of an electrical distribution system and for actuating the circuit interrupter to open upon the occurrence of predetermined operating conditions, the protective device including a magnetically permeable structure around each conductor, a multiturn winding around a portion of the magnetically permeable structure, a U-shaped bimetal member having leg portions mounted on an insulating housing of the circuit breaker, the lead wires of the multiturn coil being connected separately to the leg portions of the bimetal member and forming an electric loop therewith, and the bimetal member being movable to a tripping position to actuate a trip bar for opening the circuit through the circuit interrupter in response to a predetermined abnormal current through any one of the conductors.

3,798,581

ELECTRO-MECHANICALLY SWITCHED PERMANENT MAGNET HOLDING DEVICE

Nigel Anderson, Wigan, and Charles Peter Southworth, Mawdsley, near Ormskirk, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,132
Claims priority, application Great Britain, Nov. 2, 1971, 50797/71
Int. Cl. H01f *7/04*
U.S. Cl. 335—291 **9 Claims**



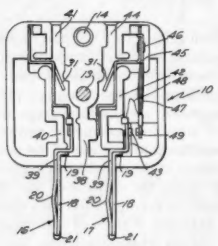
A magnetic lift device includes a permanent magnet and a pair of pole members disposed to provide first and second magnetic circuits respectively through the load end and the keeper end of the device. A control winding switches the magnet flux between the two magnetic circuits. A movable keeper plate contacts a non-magnetic safety member during a lift operation. Spacer rods extend from the keeper plate to the load end over a predetermined distance chosen to facilitate the separation of light magnetic loads from the lift device.

3,798,582

ELECTRICAL FLASHING DEVICE

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Mar. 20, 1972, Ser. No. 236,139
Int. Cl. H01h *61/06*
U.S. Cl. 337—92 **2 Claims**



The device comprises a circuit interrupter which is plugged into an electrical outlet. When an electrical lamp is plugged into the device, the lamp will flash on and off as the device intermittently interrupts the circuit. The flashing device comprises a rectangular housing having a base and a cover. The housing has a plurality of wall portions dividing the housing area into a plurality of segments. The various wall convolutions serve to frictionally retain the electrical parts without screws or other fastening means. A pair of identical blades are mounted for insertion in an electrical outlet. Internally, there

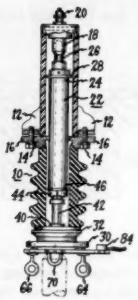
are two identical contact elements. One contact is locked to one end of one of the blades. The other contact is spaced from the other blade. A bimetallic strip extends from the spaced contact toward the adjacent blade and is covered with a coil of fine wire. One end of the wire is attached to the contact and the other end to the blade. The blades are plugged into an electrical outlet. Now, when a lamp is plugged into the device, its blades touch the contacts to complete a circuit. Current will initially flow along the fine wire. The wire does not allow the passage of sufficient current to light the lamp. However, the current will heat up the coil of wire which will heat the bimetallic strip. This causes the strip to bend against the contact to allow the current to bypass the wire and light the lamp. The coil and strip cool sufficiently so that the strip bends away from the contact and the light goes out. The wire again heats up and the entire sequence is repeated, causing the lamp to flash on and off.

3,798,583

FUSE BUSHING WITH SEALING MEANS PROVIDING HOTSTICK CHANGEOUT OF FUSE

Albert J. Charbonneau; Gerard V. Conway, both of Pittsfield, and Henry Hucko, Littleton, all of Mass., assignors to General Electric Company

Filed June 23, 1972, Ser. No. 265,568
Int. Cl. H01h *85/02*
U.S. Cl. 337—202 **6 Claims**



A fuse bushing for electrical apparatus such as a transformer. The bushing receives a fuse such as a current limiting fuse and is sealed at its outer end. The sealing means includes a cover with an O-ring gasket, the cover having a member extending into the bushing which is connected to the outer end of the fuse. A contact plate is provided fitting over the cover and having two captive eyebolts which are threaded into the flange mounted on the end of the bushing. The eyebolts may be operated by a hotline tool and when tightened into the flange cause the contact plate to contact the cover, firmly holding such cover into the bushing thereby sealing the bushing by the O-ring. A vent device is provided in the cover for direct venting of fuse gases on operation of the fuse.

3,798,584

QUICK CONNECT CEILING ELECTRICAL FIXTURE MOUNTING

Junius W. Person, 15910 La Forge St., Apt. N., Whittier, Calif.

Filed May 22, 1972, Ser. No. 255,263
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **2 Claims**

A mounting for connecting an electrical fixture to a conventional outlet box positioned within a ceiling or wall wherein a first plate having a pair of arcuate slots therein and a pair of concentric, arcuate spring contact members thereon is permanently connected to the outlet box and a second plate having a pair of spaced contacts thereon is connected to the electrical fixture. The contacts on the second plate are adapted to extend into and through the arcuate slots in the first plate when the first and second plates are in mutual engagement. The contacts terminate in laterally extending ears adapted,

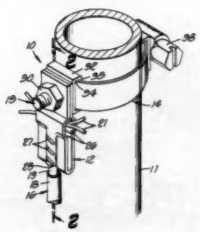
upon rotation of the second plate, to engage the arcuate spring contact members on the first plate to mechanically and electrically connect the electrical fixture to the outlet box.

3,798,585

COMBINATION CABLE ANCHORAGE AND GROUNDING ACCESSORY

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Continuation-in-part of Ser. No. 159,799, July 6, 1971, abandoned. This application Feb. 7, 1972, Ser. No. 223,860
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 L **22 Claims**



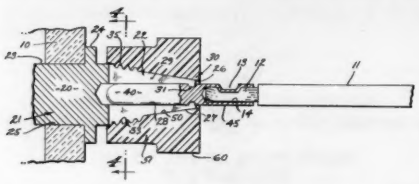
A cable anchorage and grounding accessory usable with cables generally and particularly with those having shield jackets to be grounded. The accessory includes a U-shaped clip provided with a channel having one end opening through its bight portion and sized to make a strong anti-twist mechanical and electrical connection to the exposed cable shield jacket as the free ends of the clip legs are clamped together. The channeled head of the clamping bolt is compressed against a grounded conductor by a clamping band and the clip is preferably formed with slots for assembly to a clamping bolt from one side of the bolt. In certain applications, as when anchoring a shielded cable to a fuse protector, the anchor clip is shrouded with a non-conductive strain relief protective sleeve.

3,798,586

UNION FOR CONNECTING ELECTRICAL CONDUCTORS

Paul Huska, 739 Moreno Ave., Los Angeles, Calif.

Filed May 22, 1972, Ser. No. 255,691
Int. Cl. H01r 13/30
U.S. Cl. 339—89 R 11 Claims



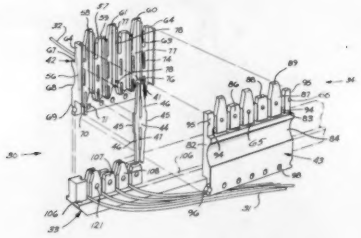
An electrical union comprising socket and pin members having coextensive pressure contact secured by a sleeve member adapted to have locking tapered engagement over the socket member thereby constricting the socket member onto the entire exterior of the pin member inserted therein. In its preferred form, the socket member is segmented with a tapered outer diameter wall and a cylindrical bore, the pin member is of right cylinder form to slideably fit into said outer diameter wall, the sleeve has a tapered inner diameter wall complementary to and axially forceable onto the outer diameter wall of the socket member so as to constrict the same in cylindrical parallelism, and said axial force is applied by locking threads at the interface of said tapered engagement.

3,798,587

DEVICES FOR MAKING ELECTRICAL CONNECTIONS

Benjamin Clement Ellis, Jr., Snellville; Christian Scholly, Atlanta; Charles McGonigal, Grayson, all of Ga., and John Howard Snyder, Fallston, Md., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Ellis and Western Electric Company, Incorporated, New York, N.Y., by said McGonigal, Scholly and Snyder

Filed Jan. 17, 1972, Ser. No. 218,358
Int. Cl. H01r 9/08
U.S. Cl. 339—97 P 25 Claims



Connectors made from a flat strip of electrically conductive material, each having a center portion with two oppositely extending bifurcated portions cantilevered therefrom, a free end of each of the furcations being tapered and formed with a double bevel, are mounted individually between partitions formed in a first plastic part and secured therein against unintended lateral and longitudinal movement. A second mating plastic part is assembled to the first plastic part to form a connector block assembly having opposed rows of alternating depth teeth protruding from one side of the block with fanning slots formed between adjacent ones of the teeth, and having spaced legs extending from an opposite side of the block. Inwardly projecting guide fins formed on the legs and aligned with associated ones of the fanning slots extend into openings formed in a lower portion of each of the pins to further lock the connectors.

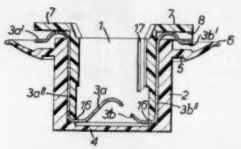
The connector block assembly is mounted on a plastic index strip having opposed rows of alternate depth teeth with fanning slots between adjacent teeth for receiving first conductors straddled across the opposed associated slots. During mounting, the guide fins align the fanning slots in the connector block and the index strip, and the first conductors are caused to be moved along the beveled edges of the connectors which slice through the insulation, after which the conductors are moved through rounded entrance portions and between the furcations of one bifurcated portion of asociated connectors to establish electrical contact between one bifurcated portion of each of the connectors and the associated first conductor. Second conductors are moved into the fanning slots of the connector block assembly between the furcations of the other bifurcated portions of the connectors to establish an electrical connection with the associated ones of the first conductors.

3,798,588

ELECTRICAL SOCKET ASSEMBLY

John Arthur Howe, Tollerton, and David Michael Anthony, Kenworthy, Barnsley, both of England, assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 9, 1972, Ser. No. 305,207
Claims priority, application Great Britain, Nov. 10, 1971, 52175/71
Int. Cl. H02b 1/02
U.S. Cl. 339—127 3 Claims



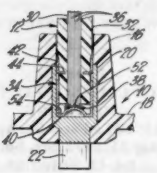
An electrical socket assembly for a lamp or a plug is formed of two body parts in mutual mating engagement. Contact members are positively located in cavities defined between the body parts, and may be shaped to engage directly with conductors on a printed circuit board with which the socket is assembled.

3,798,589

ELECTRICAL LEAD

Lawrence R. Deardurff, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Sept. 27, 1972, Ser. No. 292,577
Int. Cl. H01r 15/12
U.S. Cl. 339—223 S 8 Claims



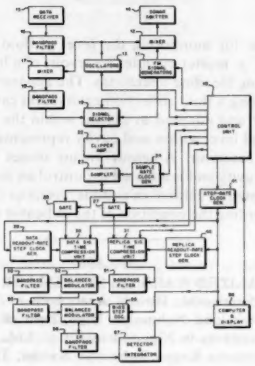
An electrical lead suitable for use in ignition systems for internal combustion engines including an electrical conductor fully surrounded by insulation with an exposed conductor portion extending from the insulation at one end of the lead; and an electrically conductive termination cap fastened at one end including a closed central portion oriented transversely of the

conductor in pressed electrically conductive contact with the exposed conductor portion.

3,798,590
SIGNAL PROCESSING APPARATUS INCLUDING DOPPLER DISPERSION CORRECTION MEANS

Arthur J. Jacobson, Fort Wayne, Ind., and Gilbert J. Huey, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1968, Ser. No. 761,010
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R **17 Claims**

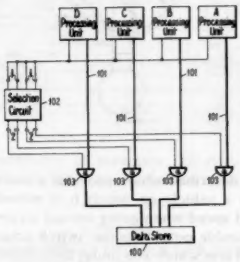


Apparatus for processing data signals such as sonar return signals of the frequency modulated type wherein adverse effects of Doppler dispersion are eliminated which apparatus includes a signal generator providing an inverse replica of that signal which is shifted upwardly in frequency and is transmitted as the sonar signal, a pair of digital time compression units for compressing respective ones of the down-shifted sonar return signal, i.e., a data signal, and the replica signal, a pair of step clock generators each enabling the memory bank contents of the associated time compression unit to be read out at respective various rates thereby varying in steps the time compression ratios of the units and bandpass correlation apparatus including a first balanced modulator for receiving and operating on the compressed output signals of the time compression unit. The output frequencies of the step clock generators vary in steps so that the compressed replica signal frequency is, in effect, translated upwardly by decreasing degrees for a range of predetermined positive relative target velocities and, thereafter, the compressed data signal frequency is translated upwardly by increasing degrees for a range of predetermined negative relative target velocities thereby enabling, in effect, correlation of the data signal with a suitable replica signal for each of a number of predetermined relative target velocities in a predetermined range. The filtered output signal from the first modulator and an output signal of a step oscillator whose output signal frequency varies in steps according to the predetermined relative target velocities are applied to a second modulator to compensate for Doppler-induced frequency shifts in the transmitted sonar signal. The filtered output signal of the second modulator is detected and integrated to provide points on the correlation functions in the range-Doppler plane.

3,798,591
ACCESS CIRCUIT FOR A TIME-SHARED DATA PROCESSING EQUIPMENT

Brian Harry Phillips, Rugby, and Peter Carrington, Coventry, both of England, assignors to The General Electric Company Limited, London, England

Filed Sept. 28, 1971, Ser. No. 184,515
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 **4 Claims**

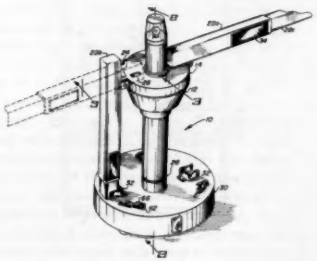


A multiple access circuit for a stored-program-control signalling system and giving access, for example, to a common data store from a number of processing units in such manner that only one processing unit obtains access at a time and additionally so that if two or more other processing units are queueing for access a priority arrangement allots access to a particular one of the waiting units when the data store becomes available. The priority allotment may be fixed or variable.

3,798,592
INTERSECTION TRAFFIC DIRECTOR DEVICE

Glenford Lilly, 1728 W. Argon St., Mesa, Ariz.

Filed Nov. 13, 1972, Ser. No. 305,860
Int. Cl. G08g 1/095
U.S. Cl. 340—41 A **9 Claims**



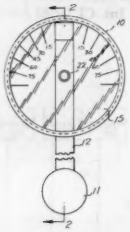
A portable revolving traffic signal device employing telescoping, retractable arms driven through 45 degree movement by a bevel gear drive to provide normal intersection traffic control as well as sequentially controlling lights on the arms for left turn only control. The arms are retractable via separately driven jackscrews controlling telescoping sections and can be folded and held in place on a pedestal of the traffic device.

3,798,593

VEHICLE CURVE SPEED WARNING DEVICE

Raymond A. Sartor, 1518 Zuni, Pueblo, Colo.

Filed June 30, 1972, Ser. No. 268,206
Int. Cl. B60q 5/00
U.S. Cl. 340—52 H 11 Claims



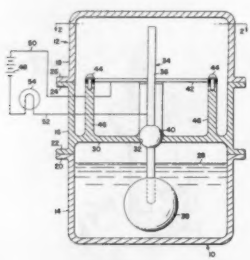
A device is described which provides a visual and audible warning when a vehicle on which it is mounted exceeds a predetermined speed when going around a curve. The device comprises a double potentiometer switch actuated by a pendulum contact arm which acts under the influence of centrifugal force to vary the resistance in circuit with a warning light. The greater the speed of the vehicle in making the turn, the further the contact arm will move along the resistance, decreasing the total resistance in circuit with the lamp, causing it to glow more brightly. When the contact arm passes a predetermined point on either the left resistance or the right resistance, a pushbutton switch will be closed, actuating a buzzer, indicating that the safe speed has been exceeded. The pendulum actuated contact arm is adjustably mounted so that depending upon the particular application to which the device is put, the buzzer can be made to sound at a preselected point, representing the safe speed for any particular curve.

3,798,594

VEHICLE ATTITUDE WARNING DEVICE

Francis Claire Funk, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1972, Ser. No. 310,114
Int. Cl. G08b 21/00
U.S. Cl. 340—52 H 3 Claims



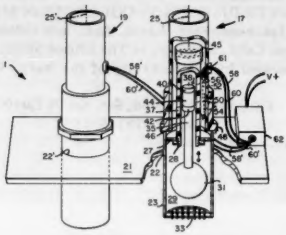
A system is provided for warning an operator of the fact that his vehicle is approaching an undesirable degree of tilt. The system includes a pendulum or gravity-responsive member which is mounted for universal movement in a housing whicl also supports a conducting ring in surrounding relationship t a stem or pin portion of the pendulum. The pendulum stem is also made of conducting material and cooperates with the conductor ring to define a switch which is normally open but which is closed to energize a warning device at the operator's station when the vehicle becomes tilted to a predetermined undesired position.

3,798,595

BRAKE FLUID LEVEL MONITORING APPARATUS

Elbert S. Dyke, 24 Atlas Ave., San Jose, Calif.

Filed Nov. 4, 1971, Ser. No. 195,685
Int. Cl. G01f 23/12; B60q 5/00; B60c 5/32
U.S. Cl. 340—59 3 Claims



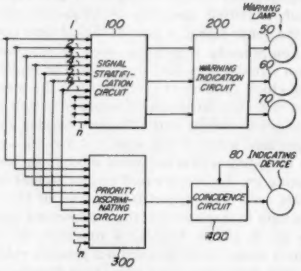
Apparatus for monitoring the level of fluid within a fluid reservoir, e. g. master cylinder reservoir, of a hydraulic brake system during bleeding operations. The apparatus comprises a housing having a fluid collection cavity, said cavity opening to the exterior and adapted to extend within the reservoir such that the fluid level within said cavity represents the fluid level within the reservoir. A sensor means senses the fluid level within the cavity and is adapted to control an indicating means in turn adapted to control an audible, visual or other recording device recording the condition of the indicator means.

3,798,596

CENTRALIZED WARNING SYSTEM FOR VEHICLES

Masaharu Sumiyoshi; Hiroshi Arai, both of Toyota; Hisato Wakamatsu, and Nobumasa Higo, both of Kariya, all of Japan, assignors to Nippondensco Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of, Japan

Filed Oct. 26, 1971, Ser. No. 192,421
Claims priority, application Japan, Oct. 27, 1970, 45-94544
Int. Cl. B60q 1/00
U.S. Cl. 340—52 F 11 Claims

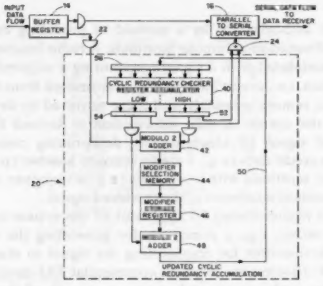


A centralized warning system for vehicle is provided wherein "1" and "0" signals are received from a plurality of sensors mounted at various parts of a vehicle where checking is required, whereby according to preliminary classified conditions of danger for driving of the vehicle "Normal", "Warning" or "Danger" is identified by the "1" and "0" signals to thereby indicate the condition of danger of the defective part. Furthermore, when two or more abnormality signals are simultaneously generated by said plurality of sensors, the location of most dangerous defective part is indicated according to the predetermined orders of priority.

3,798,597
SYSTEM AND METHOD FOR EFFECTING CYCLIC REDUNDANCY CHECKING

Terrence K. Frambs, Medway, and Alejandro B. Marton, Natick, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 26, 1972, Ser. No. 266,014
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **10 Claims**



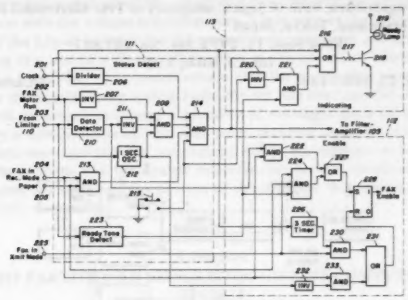
A system is set forth for processing binary coded information defined by bytes in a data stream in order to facilitate detecting of errors resulting from the transmission of the information. The system includes a register accumulator for receiving and storing up-dated bytes of binary data. First means for effecting modulo 2 summing is provided responsive to the application thereto of combinations of binary signals related to selected bytes in the data stream and to a segment of a byte previously stored in the accumulator so as to generate sums defining unique modifiers selection signals. These signals are applied to a memory storage means which stores a plurality of predetermined binary coded modifiers which are selectively retrievable responsive to respective unique modifier selection signals. In addition, a second means for effecting modulo 2 summing is provided responsive to retrieved modifiers and to another of the segments of the byte stored in the accumulator for generating a sum comprising an up-dated cyclic redundancy accumulation. This up-dated cyclic redundancy accumulation is then supplied to the accumulator and stored therein for subsequent transmission.

3,798,598
DATA COUPLING APPARATUS FOR DEDICATED COMMUNICATION LINES

John Tambert, Rochester; Stanley J. Zurakowski, Fairport, and Charles L. Jacobson, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 23, 1971, Ser. No. 165,455
Int. Cl. H04l *15/00*; **H04m** *11/06*
U.S. Cl. 340—147 R **11 Claims**

Data coupling apparatus for establishing a data communication path between a local data device and a remote data device over an existing communication channel. The capability of each of the local data device and the remote data device to receive data is detected; and when data is transmitted by the remote data device the local data device is automatically enabled to receive said transmitted data. If the local data device is adapted to transmit data, the data coupling apparatus initiates a data transmission when the remote data device is detected as being capable of receiving data. At the conclusion

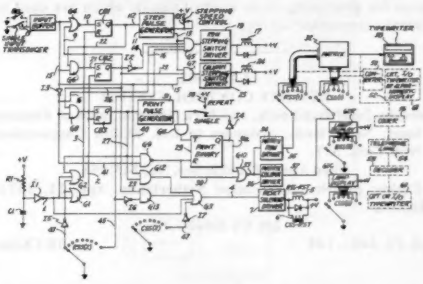


of a data transmission or reception, the data coupling apparatus terminates further operation of the local data device.

3,798,599
SINGLE INPUT CONTROLLER FOR A COMMUNICATION SYSTEM

Haig Kafafian, 4201 Cathedral Ave. N.W., Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,089
Int. Cl. H01j *29/00*; **G06c** *7/00*
U.S. Cl. 340—147 R **7 Claims**



A communication system for the handicapped having a single-input transducer or switch and a dual output for operation of an office machine, typewriter or the like, or a display, or a punched or magnetic storage device, as well as almost any material where data or information is to be stored, printed, displayed, or otherwise used, e.g., through a device which may be a matrix. In a "Hold" embodiment, upon the first actuation of the input switch, a stepping switch is stepped to provide the first coordinate of the matrix. When the switch is deactivated, the stepping switch stops at a desired row, and a second stepping switch automatically moves to the desired column. Upon reactivation of the input switch, the second stepping switch stops at the desired column, and signals are sent out through the matrix to initiate activation of an element or elements. The activated element or elements may cause a letter on a typewriter to be typed or a lamp to light which displays a symbol, letter, or function, or any combinations thereof. Whereupon, the stepping switches are reset and the system is ready to accept other signals.

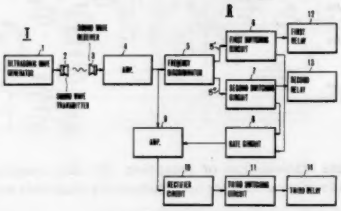
In a "No-Hold" embodiment of the invention, upon a first actuation of the input switch, the row stepping switch commences to step. Upon a second actuation of the input switch, the row stepping switch stops at the desired row, and at the same time a column stepping switch automatically starts stepping along the matrix. When the desired column is reached, the input switch is actuated a third time, and a signal is fed to actuate an element in the matrix to type a letter, etc.

3,798,600

METHOD AND SYSTEM OF REMOTE CONTROL

Noboru Saikaishi, Tokyo, and Shigeharu Takamatsu, Sagamihara, both of Japan, assignors to Trio Electronics Incorporated, Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,857
Int. Cl. H04q 9/00
U.S. Cl. 340—148 4 Claims



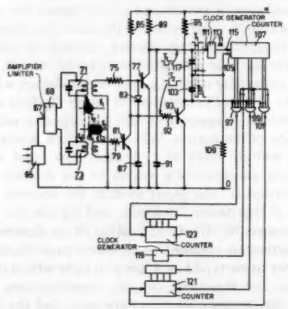
Control waves having different frequencies are generated and successively transmitted from a transmitter. The control waves are received at a receiver and are applied to a frequency discriminator which generates positive, negative and zero voltages in response to the frequencies of the received control waves for generating three control signals which are used to control a controlled device.

3,798,601

REMOTE CONTROL SYSTEM

Cornelis Jozef Hulsbosch, and Dirk Nederlof, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,558
Claims priority, application Netherlands, Apr. 21, 1971, 7105352
Int. Cl. H04b 1/68
U.S. Cl. 340—148 10 Claims



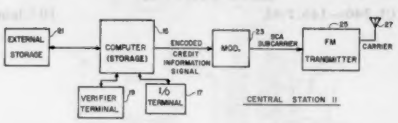
An ultrasonic remote control system in which the influence of echoes on a pulse duration information transmission is prevented by using signals having a first and a second frequency and in which the occurrence of the signal having the first frequency determines the commencement of the pulse duration information and the occurrence of the signal having the second frequency determines the end of this information.

3,798,602

CREDIT AUTHORIZATION SYSTEM

John F. Hynes, Jr., 12356 Greekhaven, Des Peres, Mo.

Filed Jan. 17, 1972, Ser. No. 218,198
Int. Cl. H04q 5/00
U.S. Cl. 340—149 A 15 Claims



Credit authorization by a method of providing credit account information at remote terminals. A radio frequency carrier is modulated with a signal constituting a sequence of encoded data, i.e., credit information, transmitted from a central station to remote terminals, and there retrieved by demodulation of the carrier. Credit information is derived from the retrieved signal by electronically determining coincidence between credit data (e.g., a credit account number) presented at remote terminals with credit data (e.g., a sequence of "bad" credit account numbers) of the retrieved signal.

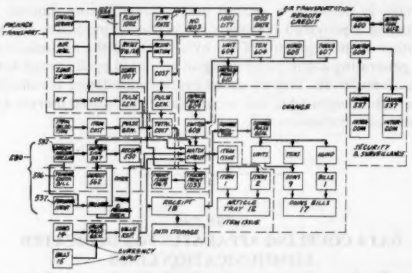
This is accomplished by apparatus of the system including central means, e.g., a computer, for generating the signal, a central transmitter for transmitting the signal to the remote terminals (preferably through commercial FM broadcasting subcarrier techniques), and receivers at each of the remote terminals. Digital circuitry at the remote terminals makes the coincidence determination.

3,798,603

BUSINESS TRANSACTION APPARATUS

Eric C. Wahlberg, 32 Eighth St., Stamford, Conn.

Continuation of Ser. No. 170,520, Aug. 10, 1971, Pat. No. 3,705,384, which is a continuation-in-part of Ser. No. 884,620, Dec. 12, 1969, abandoned. This application Sept. 22, 1972, Ser. No. 291,295The portion of the term of this patent subsequent to Dec. 5, 1989, has been disclaimed.
Int. Cl. G07f 7/02; H04q 1/00
U.S. Cl. 340—149 A 24 Claims



A multiple transaction business machine is provided which includes means for selecting a plurality of transactions, totaling the cost of such transactions and determining the value of payment tendered in satisfaction of the cost of the transactions by payment evaluating means receiving legal tender, credit media and negotiable instruments from the purchaser in tender of satisfaction of the cost of the transactions selected, as well as means for validating the credit media and negotiable instruments presented and means for validating the identity of the purchaser. The machine issues tickets and the like in response to preselection of various modes of transportation, package mailing and handling, etc. A remote data link for the purpose of credit availability verification and purchaser

identity is also provided together with remote control, intercom and live identification media.

3,798,604

DEVICE FOR CHECKING CORPORAL FUNCTIONS

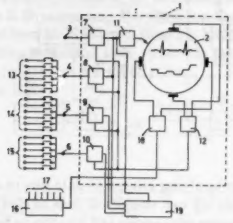
Pieter Geert Kuipers, and Jan Albert Meerdink, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,620

Claims priority, application Netherlands, Feb. 16, 1968, 6802208

Int. Cl. G08b *23/00*; **G01r** *13/20*

U.S. Cl. 340—150 **10 Claims**



A monitoring device comprising an oscilloscope having three inputs connected to three switching members. The first switching member receives signal voltages corresponding to the monitored parameters, whereas the second and third switching members receive upper and lower limit voltages of the signal voltages. The oscilloscope is scanned horizontally and vertically. The signal voltages and the limit voltages are sequentially scanned during each horizontal trace period and are compared with a sawtooth voltage synchronized with the vertical scan of the oscilloscope to produce control pulses that are applied to the oscilloscope beam control grid to intensity modulate same to simultaneously display the signal and limit voltages.

3,798,605

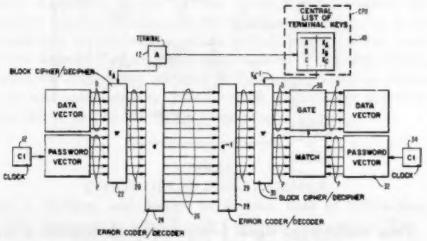
CENTRALIZED VERIFICATION SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,183

Int. Cl. H04q *5/00*

U.S. Cl. 340—172.5 **6 Claims**



This specification describes a multi-terminal data processing system having means and process for verifying the identity of subscribers to the system. Validity of a terminal request for communication with the data processing system are determined on the basis of a centralized verification system. Each subscriber to the system is identified by a unique key binary symbol pattern. The central data processing unit contains a listing of all valid keys for subscribers to the system.

Two embodiments of the centralized verification system are presented, a password system and a handshaking system. In the password system, all data or information originating at the terminal under use of the subscriber is enciphered in combination with the unique subscriber key. Upon proper deciphering of the key or password at the central processing unit and arriving at a match with one of the keys in the processor's listing, the subscriber may communicate with the processing system. In the handshaking system embodiment, the user and the central processor exchange a plurality of messages each formed by a combination of new and prior received data. Received data messages are also maintained within the registers at both the terminal and the central processor for further verification upon the return of the portion of the message that was previously transmitted.

3,798,606

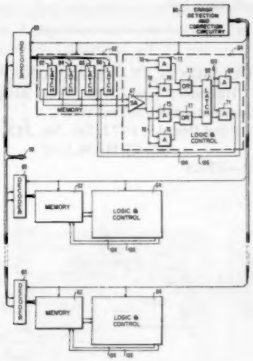
BIT PARTITIONED MONOLITHIC CIRCUIT COMPUTER SYSTEM

Robert A. Henle, Port Chester; Gerald A. Maley, Fishkill, both of N.Y., and Wilbur D. Pricer, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,056

Int. Cl. G06f *11/00, 13/00*

U.S. Cl. 340—172.5 **9 Claims**



A monolithic circuit bit partitioned computer system for processing M bits of data comprising a substrate for providing electrical interconnection paths to a plurality of M monolithic circuit modules. Each of the M modules includes distinct decoder means, memory means, elemental quasi-arithmetic means and control circuitry, and each of the M modules are uniquely associated with the distinct ones of the M bits of data for collectively and universally processing the M bits of data.

3,798,607

MAGNETIC BUBBLE COMPUTER

Robert C. Minnick, Houston, Tex.; Paul T. Bailey, Creve Coeur; Robert T. Sandfort, St. Charles, both of Mo., and Warren L. Semon, Dewitt, N.Y., assignors to Monsanto Company, St. Louis, Mo.

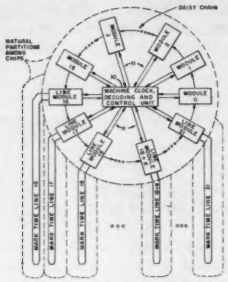
Filed Dec. 1, 1972, Ser. No. 311,401

Int. Cl. G06f *3/00*; **G11c** *11/02*

U.S. Cl. 340—172.5 **22 Claims**

In a general purpose computer system operating on a fetch-execute cycle, arithmetic, logic, storage and control functions are carried out by means of magnetic bubble circuits. A plurality of logic sub-systems called modules are interconnected by a closed unidirectional buss permitting intermodule transfer of data in the form of magnetic bubbles. The memory for the computer consists of a plurality of serial shift registers

called mark-time lines each comprising a chain of recirculating loops. On signal, data can be advanced in series around the chain. Modules in one subset are specialized to perform various functions. The remaining modules constitute logic interfaces between corresponding mark-time lines and the special subset of modules. All instructions include designating an intermodule transfer or of initiating a search for a storage location in a mark-time line.



3,798,608

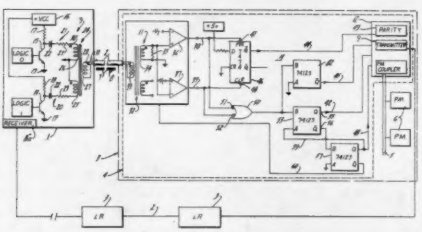
DIGITAL SIGNAL TRANSMISSION APPARATUS

Thomas W. Huebner, New Berlin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,464

Int. Cl. H03k *5/00*

U.S. Cl. 340—172.5 **17 Claims**



A bi-polar data signal of a nominal period is transmitted over a loop cable to a plurality of series connected remote stations, each of which includes means to process the bit. Each bit signal is divided into a plurality of three successive intervals. During each of the first two periods, the one polarity pulse signal occurs on one line followed by an opposite polarity pulse on the line. A negative and positive signal detector generates a pair of corresponding pulses. The first pulse fires a timing means to generate a short pre-clock pulse employed as a timing pulse in the processing of the data bit signal. The trailing edge of the pre-clock pulse fires clock timing means having a longer timing period. The output of the clock timing means is connected to the pre-clock means and to the receiving means to inhibit further signal formation. A clock pulse is derived even if one of the data polarity pulse is lost to continue proper transmission of the successive bits of a message frame even if the data bit is transmitted with erroneous information. The processing circuitry further includes a parity check on the received data to indicate such a fault.

3,798,609

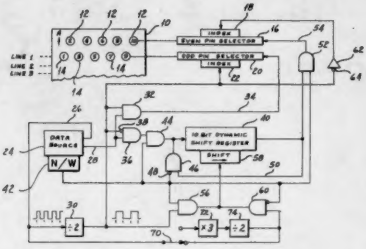
DYNAMIC SHIFT REGISTER FOR STAGGERED PRINTING HEAD

Hugh F. Frohbach, Sunnyvale, Calif., assignor to The Rapifax Company, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,490

Int. Cl. G03g *15/00*

U.S. Cl. 340—172.5 **12 Claims**



A system for applying groups of data bits to an electrostatic writing head having two staggered lines of electrodes in which odd bits of a group are serially fed directly to the electrodes of one line and in which even bits of a group are fed to the electrodes of the other line through a dynamic shift register having a number of places equal to n where n is the number of bits in a group and in which means is provided for recirculating the bits through the shift register in response to a wait signal.

3,798,610

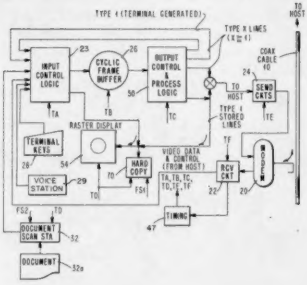
MULTIPLEXED INTELLIGENCE COMMUNICATIONS

Burtt E. Bliss, Hyde Park; James T. Dervan, III, Salt Point, both of N.Y.; Leroy E. Griffith, Boulder, Colo.; Bruce D. Pung, Wappingers Falls, N.Y.; Robert A. Thorpe, and Norman A. Vogel, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,787

Int. Cl. G06f *3/04, 3/14*; **H04l** *5/00*

U.S. Cl. 340—172.5 **17 Claims**



Time multiplexed signal communications between a host computer and subordinate data processing terminals include coded and non-coded information. Coded information originated by the host includes entry-separation marker signals. Individual marker signals are used at terminals to control access to associated particular time spaces of the multiplex frame. The host signals are serially stored by addressed terminals in the time sequence of transmission. The stored marker signals are protected from modification at terminals and control write-in access to storage spaced allocated to the associated time segments; thereby controlling terminal editing

operations. Edited information in unprotected terminal storage spaces is easily segregated -- e.g., for compact transmission to the host -- by reference to the stored marker signals. When the non-coded signals comprise raster scanned picture information displayable at terminal display apparatus the markers are used to generate cursors indicating edit-accessible positions (e.g., character entry spaces). A distinct displaced cursor provides unique indication of the space next accessible for entry in a normal keying (i.e., typing) sequence.

3,798,611

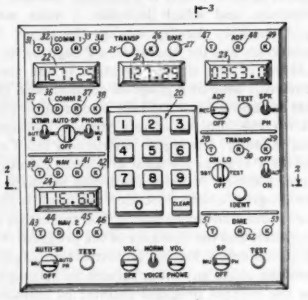
INTEGRATED PUSH BUTTON PANEL FOR CONTROLLING AIRCRAFT INSTRUMENTALITIES

Reginald R. Gallant, Hartford; Roger S. Swain, Wolcott, and Neil S. Waterman, Stamford, all of Conn., assignors to Atlantic Design & Development Corporation, Stamford, Conn.

Division of Ser. No. 835,164, June 20, 1969, Pat. No. 3,701,945. This application June 30, 1972, Ser. No. 165,829

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **4 Claims**



A panel for controlling a plurality of instruments has a centrally disposed numerical keyboard of eleven push buttons and a plurality of digital display means, one display connected with the keyboard to indicate the sequence in which the numerical push buttons have been manipulated, each of the other display means connected with one of the instruments to indicate the digital data by which it is controlled. Digital memory storage units are associated with the keyboard and with each instrument. Switching means on the control panel enables the selected numerical setting in the keyboard storage unit to be transferred to any of the other display means, while servo means directs each instrument to respond to the digital data registered in its digital memory storage unit, as may be shown by its associated display. The eleventh push button serves to clear the keyboard and its associated digital display.

3,798,612

CONTROLLER PROGRAMMER

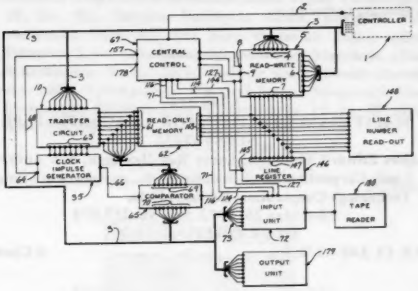
Odo J. Struger, and Joseph D. Radtke, both of Milwaukee, Wis., assignors to Allen-Bradly Company, Milwaukee, Wis.

Filed Sept. 13, 1971, Ser. No. 179,982

Int. Cl. G05b *11/00*

U.S. Cl. 340—172.5 **7 Claims**

A program for a controller is loaded manually or by means of a tape reader into a plated wire, read-write memory contained within the programmer. The programmer operates the controller according to the instructions in the program and any changes necessary to perfect the program are made. A mode switch is then operated and the program is automatically transferred, one instruction at a time, through a transfer circuit to a read-only memory suitable for installation in the controller. The transfer is made in synchronism with a ten-



phase clock and a check is made by a comparator to verify the proper loading of each instruction in the read-only memory.

3,798,613

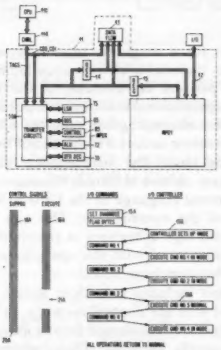
CONTROLLING PERIPHERAL SUBSYSTEMS

Gene H. Edstrom, Longmont; Edward P. Lutter, Boulder, and Francis L. Robinson, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1971, Ser. No. 194,079

Int. Cl. G05b *19/22*; **G06f** *11/04*

U.S. Cl. 340—172.5 **16 Claims**



In a set of chained I/O commands, a controller sets up a mode of operation other than that normally executed. Such mode is maintained for all chained commands by a control signal, such as SUPPRO, supplied over the I/O channel to the controller. Upon deletion of the control signal, the I/O controller automatically resets to a normal mode. In a variation, an EXECUTE signal is supplied together with the SUPPRO signal. The I/O controller responds to the EXECUTE signal to execute commands in accordance with the mode previously set up. With the EXECUTE signal being deleted for a given command, chained to the mode set-up command and with SUPPRO maintained, the I/O controller executes the command in a normal mode and then resets to the commanded or imposed mode for subsequently chained commands. Another

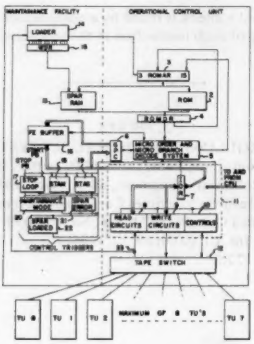
aspect is exchanging microprogram control signals between loosely coupled systems for effecting a greater variety of programmed interrelationships while maintaining the loose coupling. A further aspect is enlarged usage of microprogramming techniques.

3,798,614

MAINTENANCE FACILITY FOR A MAGNETIC TAPE SUBSYSTEM

James Edward Meadows; Larry Ray Horsman, and Anthony Louis Carpentier, all of Boulder, Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed May 26, 1972, Ser. No. 257,078
Int. Cl. G06f *11/08, 13/00*
U.S. Cl. 340—172.5 **6 Claims**



A control unit for a magnetic tape subsystem of a data processing system includes a maintenance facility. This maintenance facility permits the exercise of the magnetic tape subsystem for diagnostic and maintenance purposes. The control unit is of the microprogram type, in which a control memory contains micro orders which control the operation of the magnetic tape units. The maintenance facility exercises the tape subsystem in two different manners—with the Input/Output command language of the CPU or with the micro order language of the control unit. This can be performed while the magnetic tape subsystem is switched offline to the CPU, or time-multiplexed with the operational usage of the magnetic tape subsystem by the CPU.

The control unit includes a random access memory connected in parallel with the control memory. In the diagnostic mode, micro orders are transferred from a magnetic tape unit to the random access memory. Then, sequences of these micro orders are performed in the same way that micro orders stored in the control memory are otherwise executed in order to perform diagnostic testing.

The data path transferring the micro orders from the magnetic tape unit to the random access memory is a simple one which bypasses the normal circuits which might otherwise introduce errors into the diagnostic micro orders. Amplitude sensors, which are otherwise used for error detection and correction, are connected to majority circuits which produce outputs when the amplitude sensors indicate that a majority of the data tracks are written with a "1." In this manner, very reliable micro orders are obtained for performance of the diagnostic testing function.

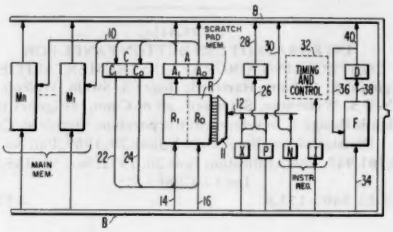
The maintenance facility provides full micro order control over a Field Engineer Buffer. Data and commands are loaded into and fetched from any buffer position under manual switch control or microprogram control.

3,798,615

COMPUTER SYSTEM WITH PROGRAM-CONTROLLED PROGRAM COUNTERS

Joseph A. Weisbecker, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,680
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **1 Claim**



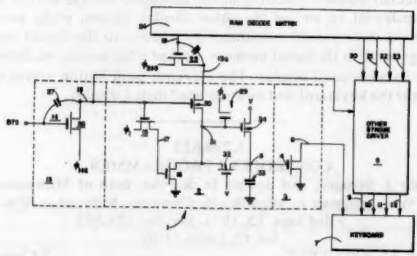
A computer system which is especially suitable for small scale computers, and which includes a main memory, a scratch pad memory having storage locations for main memory addresses and for operands, a P register for containing the address of any storage location in the scratch pad memory currently used as a program counter, and an instruction register including a portion I for an operation code, and a portion N for the address of any storage location in said scratch pad memory. During an instruction fetch cycle, the contents of the P register are used to address the current program counter location in the scratch pad memory, the contents of the program counter location are used to address the main memory and transfer an instruction therefrom to the instruction register, and the contents of the program counter location are incremented. During an instruction execute cycle, the program can cause any other scratch pad storage location to become the current program counter by transferring the contents of the portion N of the instruction register to the P register.

3,798,616

STROBE DRIVER INCLUDING A MEMORY CIRCUIT

John R. Spence, Villa Park, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Apr. 14, 1972, Ser. No. 244,185
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **10 Claims**



Data is stored in one or more memory circuits of associated strobe drivers for providing strobe signal outputs during appropriate clock intervals of operating cycles. The memory circuits can be addressed through a read-wire (RAM) decode matrix. Each memory circuit includes internal circuitry for maintaining a stored voltage level throughout a cycle.

3,798,617

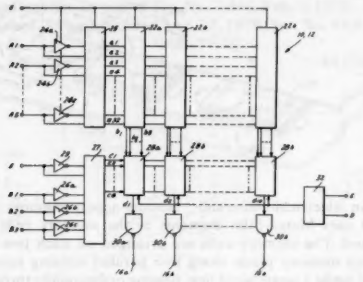
PERMANENT STORAGE MEMORY AND MEANS FOR ADDRESSING

Andrew G. Varadi, Briarwood; Richard B. Rubinstein, New York, both of N.Y., and Steven Radoff, Nashua, N.H., assignors to General Instrument Corporation, Newark, N.J.

Division of Ser. No. 86,882, Nov. 4, 1970, Pat. No. 3,691,534. This application May 8, 1972, Ser. No. 251,527

Int. Cl. G11c 7/00

U.S. Cl. 340—173 R 6 Claims



A permanent storage memory comprises a data storing section in which data is stored in a predetermined manner at a plurality of address stations defined by intersecting rows and columns. A plurality of data nodes are operatively associated respectively with the columns of the memory and means are provided for addressing a selected row thereby to develop a plurality of data signals at said data nodes corresponding respectively to the stored bits at the addressed row. A second addressing means is effective to provide a unique signal corresponding to the selected column and is effective to initiate the transfer of data signals to an output terminal from a predetermined one of the data nodes.

3,798,618

HOLOGRAPHY MEMORY APPARATUS USING A SINGLE QUARTER-WAVE SPACIAL MODULATOR

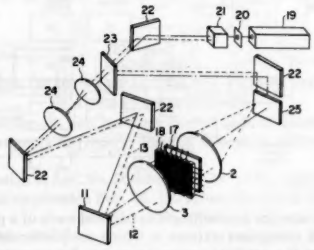
Yoshitada Oshida, Tokyo, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed July 28, 1972, Ser. No. 276,172

Claims priority, application Japan, July 28, 1971, 46-55969

Int. Cl. G11c 13/04, 11/22

U.S. Cl. 340—173 LM 11 Claims



A holography memory apparatus has an object light beam converted into circularly polarized light by a quarter-wave plate. The circularly polarized light beam is caused to impinge upon a digital spacial modulator employing a quarter-wave plate, so as to modulate the polarized direction of the incident light, in response to information to be recorded. A hologram is recorded on a hologram plate resulting from the interference between the modulated object light beam and a reference light beam.

3,798,619

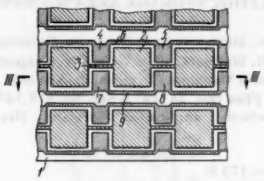
PIEZOELECTRIC TRANSDUCER MEMORY WITH NON-DESTRUCTIVE READ OUT

Konstantin Grigorievich Samofalov, ulitsa Vandy Vasileveskoi, 10, kv. 52; Tatyana Vasilievna Gruts, prospekt Vossoedinenia 20/2, kv. 61; Jury Pavlovich Zaika, ulitsa Pirogova, 2, kv. 166; Valery Alexandrovich Manzhelo, ulitsa Scherbakova, 36, kv. 25/1; Vladimir Alexandrovich Zavadsky, ulitsa Vyborgskaya, 2/4, and Leonid Sergeevich Voskrekasenko, Rusanovskaya Naberezhnaya, 12, kv. 38, all of Kiev, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,241

Int. Cl. G11c 11/22, 5/06, 7/02

U.S. Cl. 340—173.2 3 Claims



A memory device is disclosed for long-term storage and non-destructive reading of information designed as a strip of a ferroelectric material, which comprises storage cells including at least two piezoelectric transducers. The piezoelectric transducers are made on the basis of sections of said strip of ferroelectric material which acquires piezoelectric properties when affected by an electric field. Input piezoelectric transducers contain excitation electrodes and screening electrodes located on opposite flat surfaces of said strip, which are fed with read signals. Output piezoelectric transducers contain electrodes forming discharge lines and write electrodes located on opposite flat surfaces of said strip which are fed with write signals.

3,798,620

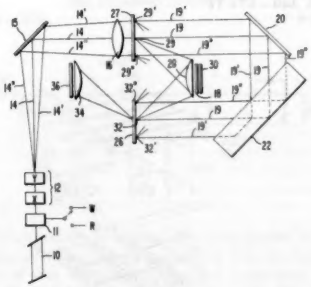
PAGE COMPOSER TRANSLATING INFORMATION FROM ELECTRICAL TO OPTICAL FORM

Louis Salvatore Cosentino, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,899

Int. Cl. G11c 11/42

U.S. Cl. 340—173 LT 5 Claims



A page composer for translating binary information from electrical to optical form includes an insulating substrate having an array of electrodes on one surface thereof connected by feedthrough conductors to the opposite surface of the substrate. Means surrounding each electrode supports an elemental portion of a flexible reflective metallic membrane in spaced relation with a respective electrode. Semiconductor

elements are positioned on the opposite surface of the substrate. Each element may be a MOS field effect transistor having a common ground connection to the metallic membrane, and an individual drain output electrode connected through a respective feedthrough conductor to a respective electrode on the other surface, whereby the portion of the flexible membrane opposite a terminal is planar or deformed depending on whether an electrical charge was supplied to the electrode by the respective transistor. When a read-out light is directed to the exposed surface of the membrane, light is reflected from planar portions of the membrane to a utilization plane, and light is scattered from deformed portions of the membrane.

3,798,621

MONOLITHIC STORAGE ARRANGEMENT WITH LATENT BIT PATTERN

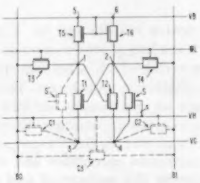
Utz Baitinger, Stuttgart; Knut Najmann, Gartringen, and Rolf Remshardt, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,147

Claims priority, application Germany, Dec. 30, 1971, 2165729

Int. Cl. G11b

U.S. Cl. 340—173 R **6 Claims**



A monolithic storage arrangement comprising a plurality of symmetrically disposed bistable storage cells operable both as read/write and read-only elements.

3,798,622

BINARY MEMORY DEVICES

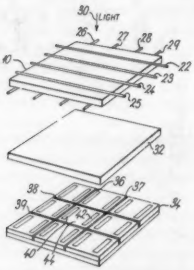
Thomas Henry O'Dell, London, England, assignor to National Research Development Corporation, London, England

Filed June 28, 1972, Ser. No. 267,058

Claims priority, application Great Britain, July 12, 1971, 32624/71

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 TF **5 Claims**



A memory device consists of a material containing bubble domains, the state of the memory being determined by the polarity of the bubble domains. Use of a transparent material containing bubble domains is described, read-out being obtained from an image of the domains formed in polarised light.

3,798,623

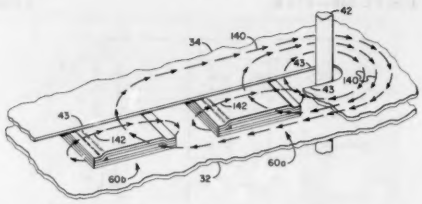
QUAD DENSITY SOLID STACK MEMORY

Alan D. Kaske; Maynard C. Paul, both of Minneapolis, and Charles H. Tolman, Bloomington, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 20, 1972, Ser. No. 273,663

Int. Cl. G11c *5/08, 11/14*

U.S. Cl. 340—174 MA **4 Claims**



An electrically-alterable, random-access memory system that uses Mated-Film elements as the memory cells is disclosed. The memory cells are arranged on each two-dimensional memory plane along two parallel running sense-digit lines while a single word line, passing orthogonally through the stacked, superposed memory planes of the so-formed three-dimensional Solid Stack memory, is inductively coupled to a pair of memory cells, one associated with each sense-digit line, on each memory plane. Thus, a word drive signal from a single word line is coupled to two memory cells on each memory plane forming a memory word of a length that is equal to 2 bits per memory plane times the number of memory planes in the stack.

3,798,624

TEXTILE YARN TREATMENT MACHINES

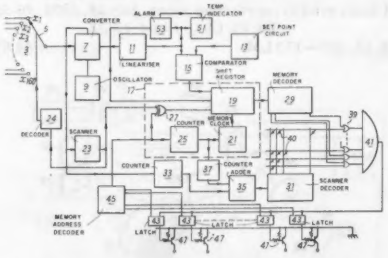
Malcolm John Baxter, and Terrence Graham Shillito, both of Manchester, England, assignors to Fielden Electronics Limited, Manchester, England

Filed Oct. 13, 1972, Ser. No. 297,326

Claims priority, application Great Britain, Oct. 16, 1971, 48242/71

Int. Cl. G06f *13/06, 15/06, 15/46*

U.S. Cl. 340—213 R **12 Claims**



Apparatus for controlling a variable at each of a plurality of locations comprises stations at which are presented analogue values of the variable, scanning means for scanning the stations in sequence, an analogue digital converter which converts the output of the scanning means to an output signal representing in sequence and in digital form the analogue values of the scanning means output, comparator means comparing each digital equivalent with a desired value thereby to provide a sequence of difference signals, a recirculating memory which recirculates very much faster than the scanning speed of the scanning means, means for loading the memory in sequence with the difference signals at the

scanning rate of the scanning means, a mark-space ratio generator for generating mark space ratios for the difference signals and means for presenting a mark-space ratio selected by the memory at each of the said locations.

3,798,625

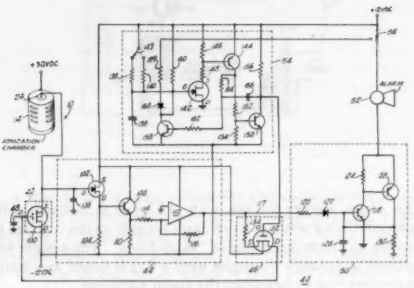
RATE-OF-CHANGE COMBUSTION AND COMBINATION DETECTION APPARATUS

Lonnie S. McMillian, and George E. Frohwein, both of Huntsville, Ala., assignors to SCI Systems, Inc., Huntsville, Ala.

Continuation-in-part of Ser. No. 7,444, Feb. 2, 1970, abandoned. This application Aug. 13, 1970, Ser. No. 63,646

Int. Cl. G08b *17/10*

U.S. Cl. 340—237 S **10 Claims**



An ionization-type gas contamination detector, intended primarily for use as a fire detector, in which a substance which emits predominantly low-energy beta particles is used as an ionizing radiation source in an ionizing chamber. Rapid changes in ionization current, which indicate the presence of a fire or smoke preceding a fire, are detected and an alarm is energized by a rate-of-change circuit in response to such changes. The output of the ionization chamber is amplified, and a level detector energizes the alarm when the amplified chamber output reaches a predetermined level. The output of the amplifier is adjusted relatively slowly to a reference level. In one embodiment, the amplifier output is adjusted to the reference level by the activation of a sample-and-hold feedback loop for a short period of time. In another embodiment, continuous feedback through a circuit with a relatively long time constant provides the desired adjustment. This feature makes the device relatively insensitive to normal atmospheric and environmental changes, while being very sensitive to changes in the level of combustion products in the atmosphere.

3,798,626

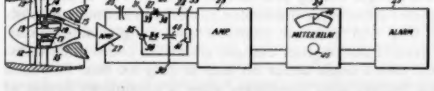
FOREIGN OBJECT IMPACT DETECTION IN MULTI-BLADED FLUID ENGINES

Bjorn Weichbrodt, and Bernard Darrel, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 50,554, June 29, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,670

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 R **6 Claims**



Vibrations generated by objects impacting on the blades of the rotor of the engine are sensed by an accelerometer located on the rotor bearing mount. A peak detection circuit with a suitable decay time constant is provided for detection of the peaks in the signal from the accelerometer corresponding to peaks in the vibrations from the rotor. A level detection circuit is provided responsive to a predetermined level of the detected signal to actuate suitable indication means such as an alarm.

3,798,627

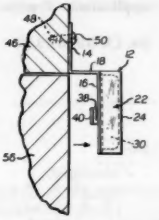
DOOR GUARD AND ALARM

Allan I. Kaufman, 460 Neptune Ave., Brooklyn, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,577

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **3 Claims**



A portable alarm device adapted to be removably mounted on the frame of a door opening to signal the opening of a door with respect to the frame. The electrically operated components of the alarm device are connected in a circuit having a normally open switch which includes an operating contact and a movably actuating arm normally spaced from said contact. The device is suitably mounted on the door frame for locating the actuating arm in opposed normally spaced relation to the surface portion of the door whereby the opening movement of the door is operative to move said arm into contacting engaging position with the switch to close the said circuit and sound the alarm.

3,798,628

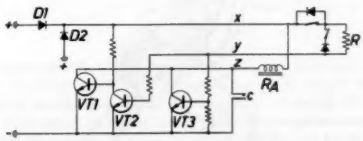
PROTECTIVE SYSTEMS AND APPARATUS THEREFOR

Goodwin Alfred George Ive, Farm Cottage High Rd., Old Chipstead, England

Continuation of Ser. No. 883,375, Dec. 9, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,250

Int. Cl. G08b *13/08*

U.S. Cl. 340—276 **6 Claims**



The invention relates to a protective loop system having a two-wire loop terminated by an impedance. The invention is a modification of that forming the subject of copending Patent Application No.818,860, now U.S. Patent 3,626,403. In this prior invention, a bistate control device was included in a protective loop; the device comprising a relay having associated contacts in an alarm circuit which are arranged to be actuated whenever the relay is energised. In the past, in order to nullify or render inoperative a two-wire loop system having an end-of-line impedance and an alarm relay circuit, it has been known to connect a second impedance across the line or in series with the end-of-line impedance in order to maintain an

alarm relay connected to the other end of the loop in the non-alarm condition despite the actuation of intruder detection contacts associated with the alarm relay. In the present invention, the bistate control device, i.e. the relay is arranged to have a quiescent range determined by selected values of the relay and the loop impedance, and the impedance means connected across the termination of the loop has a value within the quiescent range such that the relay is energised whenever a whole or partial short circuit or open circuit condition occurs in the loop.

3,798,629

ALARM SYSTEM FOR DIVERS

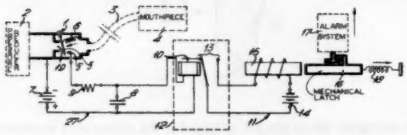
Jean de La Taillade, and Jacques Degraves, both of 1 Oustalet, Terron Superieur, 06 Nice, France

Filed Feb. 11, 1972, Ser. No. 225,562

Claims priority, application France, Feb. 11, 1972, 72.05444

Int. Cl. G08b *23/00*

U.S. Cl. 340—279 **14 Claims**



A floatable alarm device is normally restrained to the housing of a diver carried control. The control includes means for sensing respiration rate and causes release of the alarm if respiration rate substantially deviates from normal.

3,798,630

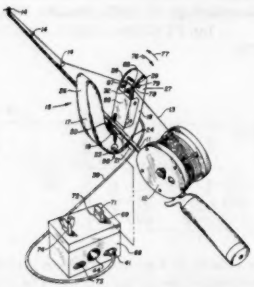
FISHING LINE MOTION SENSING ALARM

Lavurn Crosthwait, 1126 E. 28th, Anderson, Ind.

Filed Aug. 30, 1972, Ser. No. 284,893

Int. Cl. A01k *97/12*

U.S. Cl. 340—279 **12 Claims**



A spring-loaded, clothespin-type clip is provided with a string clutching member movable by string movement to operate a switch mounted on the clip. The clip is securable to a mounting post on a box containing a power supply and speaker for energization of the speaker in response to string movement. A fishing rod can be mounted in or beside the clip, and the clip is mountable wherever there is a surface to which it can be clipped.

3,798,631

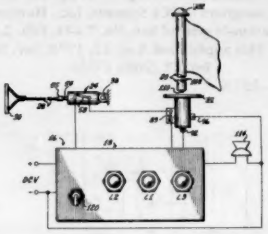
SKIER ALARM SYSTEM

Donald C. Langford, 5838 W. Fairmount Ave., Phoenix, Ariz.

Filed Nov. 13, 1972, Ser. No. 306,324

Int. Cl. G08b *21/00*

U.S. Cl. 340—279 **11 Claims**



An alarm system for use with ski boats is automatically operated when a water skier releases his grip on the tow line to produce an alarm indicative of "skier down". The system will continue to produce the alarm until a flag is raised as a warning to other boats whereupon the alarm will cease.

3,798,632

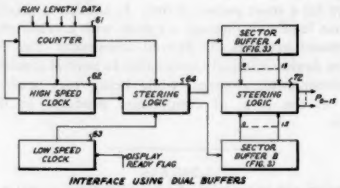
PARALLEL ADDRESSED, MULTIPLEXED-DRIVER PLASMA DISPLAY SYSTEM AND METHOD

David E. Liddle, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 2, 1972, Ser. No. 259,128

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 M **7 Claims**



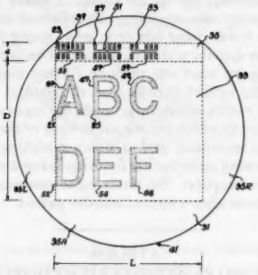
There is disclosed a plasma display system which permits the simultaneous addressing of an entire multiplex group (16-line sector) without an increase in the number of driving or mixing elements. This allows an entire sector to be addressed each 20 microseconds, rather than a single point, and reduces the full display screen update time from 5.24 seconds to 0.33 seconds.

Run-length coding provides an efficient way to store and transmit pictures for the display, rather than a complete 260K-bit map. An external interface containing a simple serial/parallel shift register cascade allows the codes to be translated into a single-sector bit map of only 8K bits. Two such local buffers used alternately allow a continuous stream of run-length codes to be accepted by the interface while allowing the display to write at full speed.

3,798,633
DATA STORAGE AND DISPLAY SYSTEM

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., North Brunswick, N.J.

Continuation-in-part of Ser. No. 9,752, Feb. 9, 1970, abandoned. This application June 29, 1972, Ser. No. 267,378
Int. Cl. G08b 5/36
U.S. Cl. 340—324 A 8 Claims

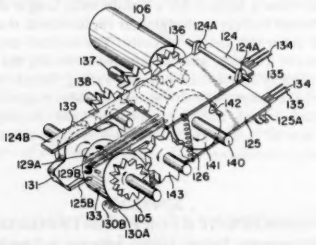


A storage and display system for alphanumeric information or the like utilizing a storage tube, the target of which includes separate storage areas for character configuration and character digital data. Characters are written in common form in the first of said areas which is read and transferred to a visual display and in digital form in the second of said areas which is read and transferred to information storage or utilization means. There is a direct correlation between the information stored in the two areas.

3,798,634
METHOD AND APPARATUS FOR DETECTING AND REPRESENTING IN BINARY FORM DIGITAL INDICATION OF MEASURING INSTRUMENT FOR RECORDING

Takeshi Kamada, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

Filed Nov. 24, 1970, Ser. No. 92,357
Claims priority, application Japan, Nov. 24, 1969, 44-93579; Dec. 24, 1969, 44-103425; May 25, 1970, 45-44010
Int. Cl. G08c 9/08
U.S. Cl. 340—347 P 4 Claims

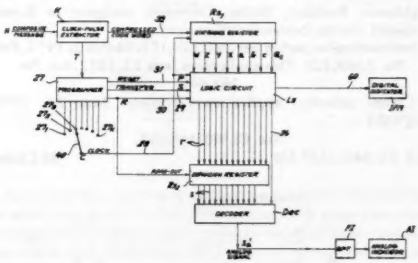


The invention provides an electric system and apparatus for generating the electrical signals representing in binary code a digital indication of a measuring instrument such as a gas meter, etc. Apparatus comprises coding means such as pins or permanent magnets arrayed in rows and columns around the periphery of each digit disk of a counter in the measuring instrument so as to represent in binary code the decimals, for example, from 0 to 9 positioned around the periphery of each disk: detecting means such as electric contacts or relays actuable by the pins or reed switches actuable by the permanent magnets, disposed along the detecting line at which the pins or permanent magnets represent in binary form the indication of the measuring instrument; and terminals electrically connected to the coding and detecting means so as to derive the electrical signals from the apparatus. Detecting means are selectively closed or opened depending upon the presence or absence of coding means, in the detecting position, representing the indication in binary form so that the electrical signals representative of the presence or absence of the coding means appear at the terminals. That is, electrical signals representing in binary code the indication of the measuring instrument are generated. Automatic recording of the indication or data of the instrument may be possible without involving any human error and these data recorded on a tape may be directly fed to a data processing system such as card-punches. The apparatus may be used also as a coding apparatus for use in on-line telemetering systems. The visual display of the indication is also possible by marking the decimals around the periphery of each digit wheel.

3,798,635
CHANNEL MONITOR FOR COMPRESSED-CODE PCM TRANSMISSION SYSTEM

Giampiero Candiani, Milan, Italy, assignor to Societa Italiana Telecomunicazioni, Siemens S.p.A., Milan, Italy

Filed May 5, 1972, Ser. No. 250,725
Claims priority, application Italy, May 6, 1971, 24160/71
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 6 Claims



A transmission path carrying interleaved messages in the form of compressed eight-bit code words is tapped for the selective monitoring of any of its message channels by means of a clock-pulse extractor and an entrance register controlled thereby to store an eight-bit word including a sign bit Q_s, three range-indicating bits a, b, c and a group of four significant bits X, Y, Z, W. This compressed code word is converted, through a logic matrix receiving the stored range bits a, b, c, into an expanded 12-bit word inscribed in an expansion register from which a decoder derives a selectively amplified replica of the original analog signal. The selective amplification is achieved by shifting the bits in the expansion register to denominational positions higher than those indicated by the stored range bits, the multiplication factor (i.e. the number of register stages encompassed by the shift) being established by a digital detector determining the highest amplitude range indicated in the monitored channel during a measuring period.

3,798,636

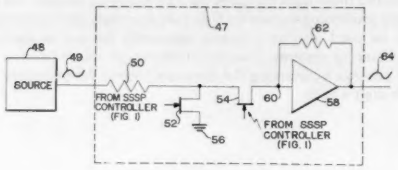
SERIES-SHUNT SWITCHING PAIR, PARTICULARLY FOR SYNCHRO TO DIGITAL CONVERSION, DC OR AC ANALOG REFERENCE MULTIPLYING OR PLURAL SYNCHRO MULTIPLEXING

Bernard M. Gordon, Magnolia, and Leopold Neumann, Lexington, both of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Division of Ser. No. 823,421, May 9, 1969, Pat. No. 3,611,354. This application Apr. 23, 1971, Ser. No. 137,016

Int. Cl. H03k *5/20, 17/00*

U.S. Cl. 340—347 AD **3 Claims**



In a multiplexing converter of synchro data to digital form, a plurality of switching devices, associated control logic, and a single analog comparator are provided for specifying the octant in which the synchro shaft angle is located. In a device, particularly for converting synchro data to digital form, for multiplying a DC or AC analog reference signal or for multiplexing plural synchro signals, a series-shunt switching pair is provided for presenting a constant impedance to a driving source in order to eliminate transients reflected back to the driving source when a variable impedance is presented to the driving source.

3,798,637

PCM CODER WITH COMPRESSION CHARACTERISTIC

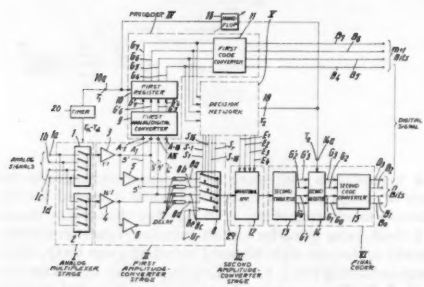
Waldemar Fruhauf, Berlin, Germany, assignor to Krone GmbH, Berlin-Zehlendorf, Germany

Continuation-in-part of Ser. No. 120,171, March 2, 1971, Pat. No. 3,688,221. This application June 12, 1972, Ser. No. 261,690

Claims priority, application Germany, June 14, 1971, 2129383

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **20 Claims**



Analog signals within a predetermined amplitude range are subjected, in a first amplifier stage, to parallel amplification with a relatively low gain (e.g. unity) and with a relatively high gain (e.g. 16:1) and are simultaneously rectified to have a single polarity (e.g. positive); the voltages on the four output leads of this stage are fed in parallel to a first analog/digital converter and, via a second amplifier stage, to a second analog/digital converter for temporary storage in a first and a second binary register, respectively. The first converter, which together with the first register forms part of a precoder, operates according to a reflected code (Gray code) to generate a sign bit, indicating the polarity of the incoming analog signal, and a group of m higher-order bits (e.g. m=3) specifying $2m$ positive or negative amplitude bands; these m+1 bits are delivered to a logic network which controls the operation of a selector switch unblocking one of the output leads of the first amplifier stage and which also modifies the gain of the second amplifier stage to make the voltage swing in its output identical for all $2m$ bands of either polarity. The second converter, also operating in a reflected code, generates a group of n lower-order bits (e.g. n=4) giving the amplitude increments or quanta within each band. The contents of both registers may be read out through further code converters translating the reflected code into the natural binary code. The selector switch normally grounds the input of the second amplifier stage to which the output voltage of the first amplifier stage is transmitted with a delay matching the interval between a writing pulse for the first register and a similar pulse for the second register; the latter pulse restores the selector switch to normal after a limited transfer period.

3,798,638

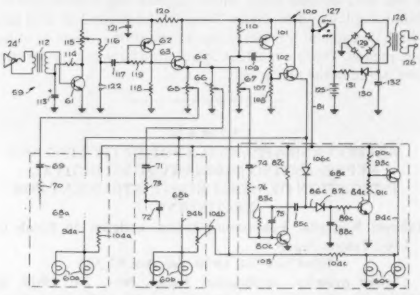
AUDIO RESPONSIVE LIGHT DISPLAY

Sandor F. Goldschmied, 1200 N. Stanford, Fullerton, Calif.

Filed Feb. 9, 1972, Ser. No. 224,707

Int. Cl. G08b *5/00*

U.S. Cl. 340—366 B **6 Claims**



Lamp driver circuitry which permits one or more lamps to be driven from a battery for a significantly longer duration of time between battery recharging or replacement than is possible with prior art driver circuits. The circuit employs two transistors in a voltage gain arrangement driving the lamps at a voltage slightly above their nominal rating. Minimum power is drawn by the lamps. The driver circuits advantageously are incorporated in an audio responsive light display wherein several sets of lamps are modulated in response to selected frequency components of an audio signal.

3,798,639

ENCODING SWITCH FOR EDUCATIONAL DEVICE

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan

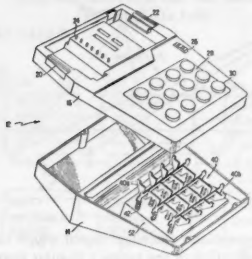
Continuation of Ser. No. 98,382, Dec. 15, 1970, Pat. No. 3,735,500. This application Jan. 3, 1973, Ser. No. 320,714

Int. Cl. H01h *63/33*; **G08c** *1/00*

U.S. Cl. 340—365 S **4 Claims**

A toy for teaching young children basic educational and social concepts, e.g., arithmetic, time-telling, etc. The subject matter is visually presented as indicia on a movable tape positioned in a cassette. The cassette is adapted to be snapped into a housing and interacts with the battery circuit provided therein. The tape is also coded to program the circuit, acting

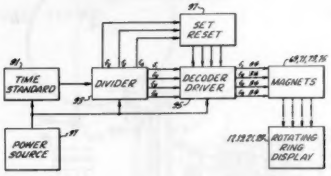
in conjunction with a keyboard. The tape is advanced only when the correct keyboard button is depressed indicating to the user that the problem has been solved. Different cassettes are provided for each subject matter.



3,798,640
ROTATING RING DISPLAY

Hans G. Dill, 2870 Tabago Pl., Costa Mesa, Calif.

Division of Ser. No. 146,199, May 24, 1971. This application Aug. 1, 1972, Ser. No. 276,918
Int. Cl. G08b 5/30
U.S. Cl. 340—378 R **14 Claims**



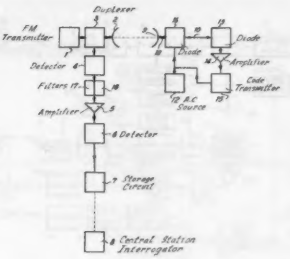
An electronic wristwatch in which time is displayed by means of a plurality of separately sealed, independently rotatable, coplanar concentric rings. Each ring carries a plurality of magnetic domains and is independently stepped by a set of electromagnets driven by a multiphase pulse train. Typically, each ring is stepped at a different rate so as to display a different unit of time, this being achieved by suitably scaling the frequencies of the multiphase pulse trains which drive the different sets of electromagnets.

3,798,641
PROCESS AND SYSTEM FOR THE IDENTIFICATION OF A VEHICLE

Jean Preti, Clamart, France, assignor to Societe de Fabrication d'Instruments de Mesure S.F.I.A., Massy, France

Filed May 3, 1971, Ser. No. 139,431
Claims priority, application France, May 5, 1970, 7016383
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 SS **7 Claims**

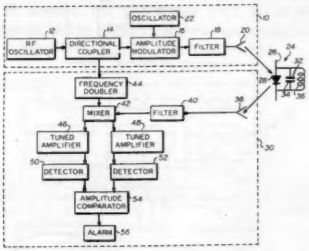
A method and system for identifying a vehicle. An interrogation station transmits a frequency modulated continuous microwave to a vehicle having responder equipment which modulates the received microwave in accordance with an identifying binary code which is decoded at the interrogation station which receives the reflected modulated microwave. The modulation may be further frequency modulated at two different frequencies or may be modulated to give decoded pulses having different widths.



3,798,642
RECOGNITION SYSTEM

Harry A. Augenblick, Mountain Lakes, and William J. Engle, Ridgewood, both of N.J., assignors to Microlab/Fxr, Livingston, N.J.

Continuation-in-part of Ser. No. 85,127, Oct. 29, 1970, abandoned. This application Sept. 27, 1972, Ser. No. 292,751
Int. Cl. G01s 9/56
U.S. Cl. 343—7 ED **28 Claims**



A recognition system comprising a transmitter for radiating an amplitude modulated signal to a target that generates a harmonic of the received signal, detects the amplitude modulating signal and modulates the harmonic signal with the detected signal. The target contains a frequency selective network that produces a coded arrangement of signal components which comprise the signal returned by the target. A receiver detects the coded arrangement of signal components.

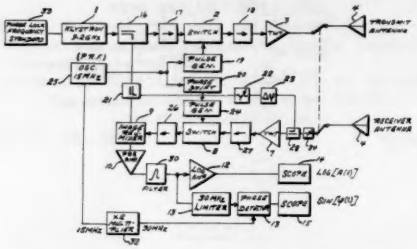
3,798,643
PULSED DOPPLER RADAR

William E. Blore; Srbislav V. Zivanovic, both of Goleta, Calif., and Bernard Charest, Ste-Foy, Quebec, Canada, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,815
Int. Cl. G01s 9/44
U.S. Cl. 343—8 **4 Claims**

A nanosecond pulse doppler radar adapted to hypersonic ballistic range studies is disclosed. The doppler signal is processed to give a continuous record of amplitude and phase using conventional narrow band electronics. The nanosecond pulses transmitted by the radar are obtained through TWT amplification of the amplitude modulated output of a CW X-band oscillator. The received signal is TWT amplified, range-

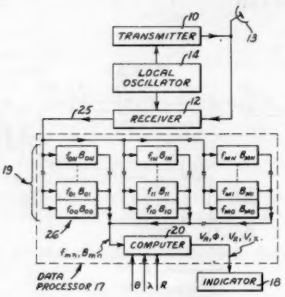
gated with a nanosecond diode modulator and then passed through a local oscillator-mixer-filter system that selects only one PRF line for subsequent narrowband amplification and signal processing.



3,798,644
VECTOR VELOCITY SYSTEM

James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif.

Continuation-in-part of Ser. No. 27,731, April 13, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,536
Int. Cl. G01s 9/44
U.S. Cl. 343—8 **25 Claims**



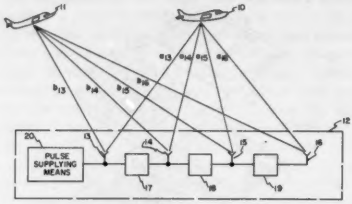
Apparatus and method for measuring the angular velocity of an object in a single illumination utilizing a coherent system such as is utilized in a conventional doppler radar for radial velocity measurements. Apparatus and method for selecting specific frequency and bandwidth signals in the echo from the object illuminated by the coherent system, with the selected signal providing the data for subsequent computation to produce an output corresponding to the angular velocity of the object.

3,798,645
ANGULAR POSITION DETERMINING SYSTEMS USING TIME SCANNED ARRAYS

Herbert F. Baurle, and Raymond J. Masak, both of East Northport, N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Aug. 28, 1970, Ser. No. 67,821
Int. Cl. G01s 1/02
U.S. Cl. 343—102 **19 Claims**

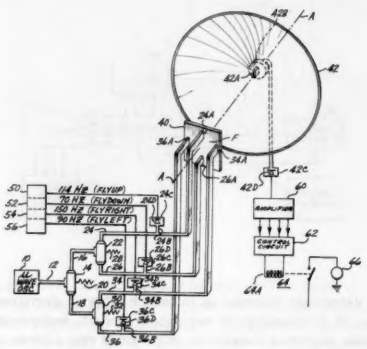
Disclosed are systems for determining the angular position of a target with respect to a reference location. One such system employs a novel array of antenna units at a reference location. The units of the array are coupled together by delay lines so that a pulse supplied to one of the units is in turn sequentially supplied to the remaining units, causing a pulse train to be radiated from the array. A target located in the field of the array is illuminated by a pulse train which has a phase distribution proportional to the angular position of the target with respect to the array and therefore with respect to the reference location. This phase distribution is detected by forming a predetermined electrical signal which can be used to provide an indication of the target's angular position either at the reference location alone, the target alone, or at both the reference location and the target.



3,798,646
CONTINUOUS-WAVE, MULTIPLE BEAM AIRPLANE LANDING SYSTEM

Walter Erwin Buehler, Issaquah, and Clarence David Lunden, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 7, 1971, Ser. No. 178,003
Int. Cl. G01s 1/14
U.S. Cl. 343—109 **8 Claims**



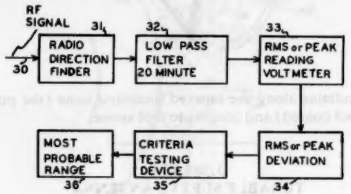
A microwave landing system for airplanes is disclosed in which continuous wave energy from a common source is radiated in overlapping beams which are modulated at respectively different audio frequencies detectable by an airplane receiver which detects the separate modulations and indicates relative offset from the overlap axis of the beams by relative levels of the demodulated signals. Modulation of the beams is effected by solid state semi-conductor devices placed in resonant cavities in wave guide system branches in the radiator element feeds. Radiator elements forming the beams comprise rectangular wave guide endings serving as highly compact closely spaced horns directed against a common paraboloidal reflector, with the narrow walls of the wave guides terminating in a common transverse plane and the broad walls terminating in flared triangular extensions beyond such plane. Monitoring of the transmitted beams for the presence and relative energy levels of the modulated beams is achieved by a microwave aperture located at the apex of the paraboloidal reflector and feeding a modulation detector and associated alarm indicator or control means.

3,798,647

HIGH FREQUENCY PASSIVE RADIO RANGE FINDER

Albert D. Bailey, Champaign, Ill., assignor to The United States of America as represented by Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,961
Int. Cl. G01s *3/02*
U.S. Cl. 343—112 D **2 Claims**



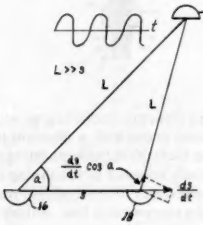
The application discloses an invention for determining the direction and distance of a remotely located radio source based on the principle that the distance to a station is inversely proportional to the root mean square value or peak value of the received continuous bearing signal as a function of time which has first been passed through a twenty minute averaging or smoothing window.

3,798,648

HIGH RESOLUTION AIRBORNE SIGNAL PROCESSING SYSTEM

Uve H. W. Lammers, 5 San Mateo Dr., Chelmsford, Mass.

Continuation-in-part of Ser. No. 833,825, June 16, 1969, abandoned. This application June 27, 1972, Ser. No. 266,779
Int. Cl. G01s *3/52*
U.S. Cl. 343—113 DE **1 Claim**



A two-antenna reception system with fixed-position antennas to receive linearly frequency-modulated signals or linearly position-modulated antennas to receive fixed-frequency signals. The difference frequency generated from the antenna signals represents the angle of arrival with respect to the system baseline. Two such systems with nonparallel baselines yield angular information in space.

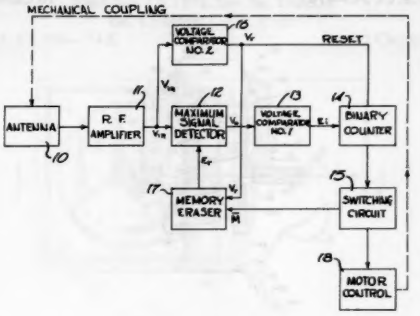
3,798,649

ANTENNA CONTROL

Shunjen Houng, 917 E. DeSmet, Spokane, Wash.

Filed Aug. 28, 1972, Ser. No. 283,951
Int. Cl. G01s *1/44*
U.S. Cl. 343—117 R **4 Claims**

An automatic control for a motorized directional antenna of the type used for reception of a high frequency broadcast signals. The control includes electronic circuitry for monitoring the incoming signal input at a broadcast receiver and electronically comparing the received signal to a signal of maximum strength from the signal source received during movement of the antenna, together with a logic-controlled switching circuit that causes the antenna motor to reverse in a predetermined pattern to hunt and aim the antenna at an angular position at which the maximum signal strength is received.

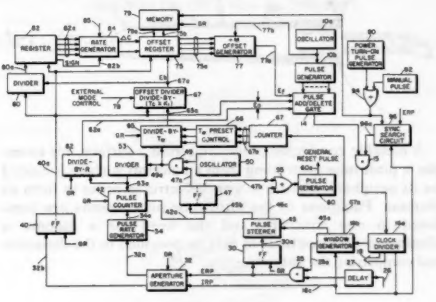


3,798,650

MEANS FOR SYNCHRONIZING CLOCKS IN A TIME ORDERED COMMUNICATIONS SYSTEM

Arthur D. McComas; James R. Ransom; James A. Kessler; Charles H. Doeller, III, and Aaron Mall, all of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1972, Ser. No. 294,055
Int. Cl. H04b *7/00*
U.S. Cl. 343—225 **3 Claims**



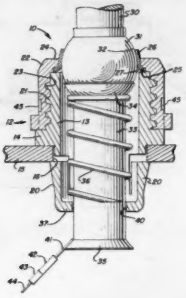
A time ordered communications system wherein a master station equipped with a master clock which includes a reference oscillator disseminates correct time to remote stations equipped with local clocks which include local oscillators by transmitting a synchronization signal whose time of arrival at the remote station with respect to an internal reference pulse generated by the remote station is a measure of remote station clock error. The time interval between receipt of the synchronization signal and generation of the internal reference pulse is digitally determined to produce an error signal which is used to add or delete local oscillator pulses so as to immediately phase correct the local clock. In addition, the first and second time derivatives of the error signal are obtained and used to compensate the local clock for oscillator drift and other errors.

3,798,651

ANTENNA MOUNTING FIXTURE

Roger D. Lehman, 60504 Warwick Rd., Deerfield, Ill.

Filed Aug. 23, 1972, Ser. No. 283,204
Int. Cl. H01q *1/24*
U.S. Cl. 343—702 **10 Claims**



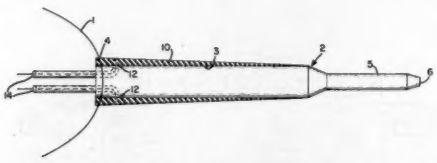
A fixture for holding a whip antenna element in position outside a cabinet housing a television set or the like is assembled with the cabinet by snapping it into place within an aperture in a wall of the cabinet. The fixture allows replacement of the antenna element from outside the cabinet.

3,798,652

PITOT TUBE DIELECTRIC ANTENNA SYSTEM

Earl E. Williams, Poland, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,789
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 **2 Claims**



A metallic conductor protruding from a surface, for example, a pitot tube protruding from an aircraft surface is coated on its periphery with a low loss dielectric in order to form an antenna. Functions of the pitot tube and antenna are combined in one structure, and the need for a radome is eliminated. Monopulse feed may be provided to the dielectric rod comprising the antenna.

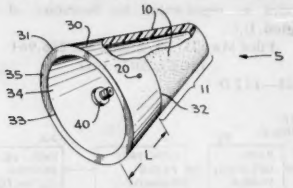
3,798,653

CAVITY EXCITED CONICAL DIELECTRIC RADIATOR

Howard S. Jones, Jr., Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,504
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 **7 Claims**

Disclosed is a small, compact, efficient antenna that uses practically no space and is employed on the tip of a projectile. The antenna is in the form of a nose cone body having an electrically conductive inner surface. The electrically coated inner surface extends around the base of the nose cone body and partially coats the outside of the nose cone and forms a band of conductive coating at the base thereof. The antenna is excited by a coaxial probe connected to the metal coating on the inside of the nose cone. Diametrically opposite the input for the coaxial probe a deep post is located across the cavity at its center in order to provide a short circuit. The excited an-



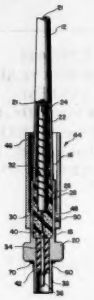
tenna radiates along the tapered dielectric cone (the portion that is not coated) and couples to free space.

3,798,654

TUNABLE SLEEVE ANTENNA

Louis J. Martino, Oakbrook; Herbert R. Blaese, Chicago, and Robert J. Steinhofer, Franklin Park, all of Ill., assignors to Avanti R&D, Inc., Addison, Ill.

Filed Aug. 16, 1972, Ser. No. 281,035
Int. Cl. H01Q *9/00*
U.S. Cl. 343—745 **8 Claims**



A tunable antenna structure including an elongated radiating element, supported at one end, a resonant tuning coil coupled to the radiating element at the supporting end, and a tuning element electrically coupled to the tuning coil for varying the electrical characteristics of the coil and matching the antenna impedance to a transmission line. A flush mounting base for mounting the radiating element and tuning means with a moisture proof seal. Both fiberglass and metal whip antennas for half wavelength and quarter wavelength operation are described. The movable tuning element is at ground potential so that one's body or hand capacitance does not affect resonance of the tuning coil during antenna tuning.

3,798,655

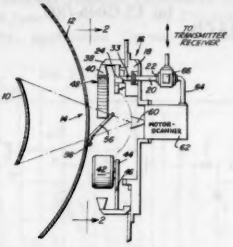
SCHWARZCHILD RADAR ANTENNA UTILIZING A RING SWITCH FOR GENERATING A SECTOR SCAN

James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,876
Int. Cl. H01g *3/14, 19/10, 19/18*
U.S. Cl. 343—754 **10 Claims**

A Schwarzschild Antenna has main and subreflectors. A ring switch disposed behind the aperture in the main reflector generates a unidirectional sector scan beam that is collimated and transmitted to the far field, via the reflectors. The ring switch is comprised of two ring-shaped waveguide halves one

of which rotates with respect to the other. Feed horns are mounted to one of the rings and are directed radially inwardly. Microwave energy from a transmitter is communicated to the horns, via the ring switch. Microwave energy emanating from the horns is directed by a lens to a rotatable mirror reflector



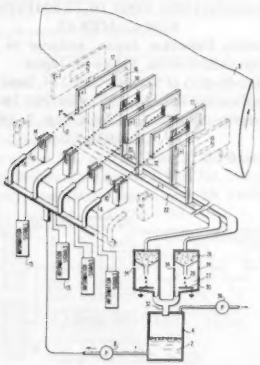
that in turn reflects the resultant sector scan energy to the main and subreflectors of the antenna. The mirror reflector can be rapidly repositioned to allow the direct communication of a separately generated conical scan to the main and subreflectors of the antenna.

3,798,656

INK RETURN SYSTEM FOR A MULTIJET INK JET PRINTER

Paul Lowy, Peekskill; Stanley Arthur Manning, Yorktown Heights, and Karl Friedrich Stroms, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 28, 1972, Ser. No. 275,990
Int. Cl. G01d *15/18*
U.S. Cl. 346—1 **10 Claims**



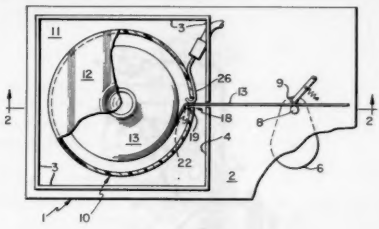
A multi-jet, ink jet printer having deflection plates at a positive or negative potential with respect to ground which includes catch chambers for returning unused ink to an ink reservoir. Non-information bearing ink droplets are passed uncharged to a catch chamber and from there through a return conduit system to the ink reservoir. To help direct the ink droplets to the catch chambers, the catch chambers are mechanically biased toward the trajectory of the uncharged droplets by placing them at a slight angle with respect to the trajectory. To prevent short-circuiting of the deflection plates to ground potential, the return conduit system includes denebulization chambers which convert the returning ink stream into large drops thus developing a high resistance path between the deflection plates and the reservoir ink at ground potential.

3,798,657

ELECTRICAL GRAPHIC MOISTURE RETAINING RECORDING CASSETTE

John M. Alden, Needham, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed July 10, 1972, Ser. No. 270,235
Int. Cl. G01d *15/06, 15/28*
U.S. Cl. 346—74 E **12 Claims**



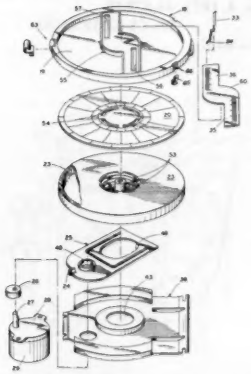
A multi-channel electrolytic recorder using a disposable cassette comprises a flat base with an upstanding socket receiving a cassette. The cassette fits in the socket and has integral circular cover and sidewall portions around a compartment for a roll of moist recording paper. A wire electrode extends from underneath the lower sheet, where is makes contact with a terminal on the base, upwardly adjacent an exit for the paper formed by a slit in the sidewall. A printed series of parallel conductive lines on a flexible insulating sheet presses the paper against the wire electrode with which the sheet cooperates to mark the paper with electrical signals applied to the conductive lines. The printed sheet also closes the exit slit to retain the moisture in the paper.

3,798,658

RECORDING DEVICE

Barney W. Jeffers, 831 Marywood Ave., Aurora, Ill.

Filed May 10, 1973, Ser. No. 359,085
Int. Cl. G01d *9/12*
U.S. Cl. 346—131 **7 Claims**



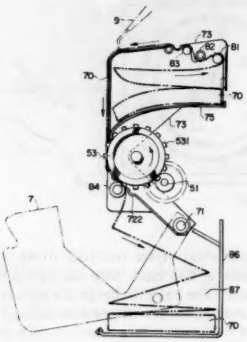
A recording device for making a permanent record of a manually entered variables versus time includes a single toothed lever driven by an electric motor in an orbital path for intermittent engagement with an internal ring gear on a chart carrying platen. Manually movable marking means for entering the variables are carried by a transparent cover hingedly mounted over the chart.

3,798,659

CHART DRIVE MECHANISM FOR RECORDERS

Takefumi Hasebe; Arata Takizawa, and Setsuc Sato, all of Tokyo, Japan, assignors to Yokohama Electric Works, Ltd., Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 240,000
Claims priority, application Japan, Apr. 5, 1971, 46/20930
Int. Cl. G01d 15/24
U.S. Cl. 346—136 6 Claims



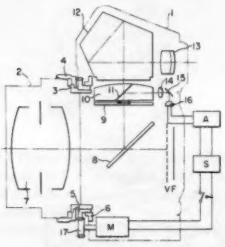
A chart drive mechanism for recorders using folded recording paper. The blank recording paper is stored folded in a supply compartment above the sprocket drive and is fed down through the sprocket drive to a storage compartment. The gearing for the drive is of unitary construction, readily changeable as required.

3,798,660

AUTOMATIC FOCUSING DEVICE FOR CAMERAS

Goro Hasegawa, Tokyo; Yukio Iura, Yokosuka, and Masayoshi Yamamichi, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1972, Ser. No. 294,519
Claims priority, application Japan, Oct. 11, 1971, 46-79982; Nov. 4, 1971, 46-87848
Int. Cl. G03b 13/20
U.S. Cl. 95—44 C 7 Claims



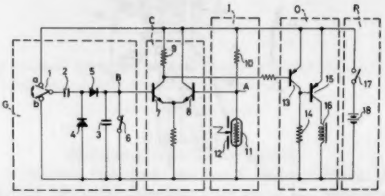
This specification discloses an automatic focusing device for cameras in which a mirror member is provided between a photographic optical system and a range finding optical system and the photographic optical system is moved by a servomotor while the mirror member is being moved up from its range finding position to its picture-taking position. Thereafter, the servomotor holds the optical system in the picture-taking position to accomplish picture-taking.

3,798,661

AUTOMATIC DIAPHRAGM CONTROL DEVICE FOR A CAMERA

Tetsuya Taguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1972, Ser. No. 284,604
Claims priority, application Japan, Aug. 26, 1971, 46-65426
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CD 9 Claims



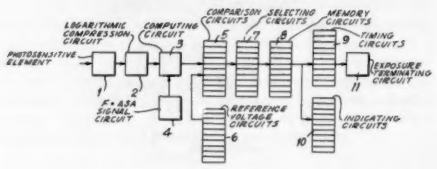
In the device disclosed, a mechanism while it is changing the aperture value of a diaphragm from a starting value, also opens and closes switching means a number of times equal to the extent to which the diaphragm is being changed. Suitable circuit means accumulate signals corresponding to the number of times the switching means is closed. A comparator compares the resulting stored value of the accumulated signals with a reference voltage that corresponds to photographic information such as the output of a light measuring photoresistor. When the accumulated stored value reaches the measured reference voltage, stopping means stop the aperture reducing operation.

3,798,662

DIGITAL EXPOSURE TIME DETERMINING SYSTEM FOR CAMERAS

Shinichi Suzuki, Fukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 259,214, June 2, 1972. This application Aug. 28, 1972, Ser. No. 284,351
Claims priority, application Japan, Sept. 7, 1971, 46-81201
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 7 Claims



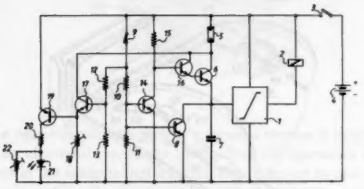
An electrical computer circuit for determining exposure time according to a digital system. A series of timing circuits are provided for respectively providing different exposure times according to which of the timing circuits is selected for operation. A particular one of the timing circuits is selected for operation as a result of comparing by suitable comparing circuits an electrical quantity corresponding to exposure time with a plurality of reference electrical quantities, a series of selecting circuits being provided to select from that one of the comparing circuits whose reference electrical quantity is closest to the electrical quantity corresponding to exposure time a signal to be transmitted to a corresponding timing circuit.

3,798,663

PHOTOGRAPHIC CAMERA WITH ARRANGEMENT FOR DETERMINING SCENE LIGHT SUFFICIENCY AND FOR CONTROLLING EXPOSURE TIMING

Eduard Wagensonner, Aschheim; Kurt Borowski, Munich, and Walter Furst, Deisenhofen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 19, 1973, Ser. No. 371,568
Claims priority, application Germany, June 23, 1972, 2230865
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CE 10 Claims



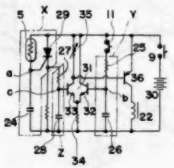
The camera is provided with a first circuit for determining scene light sufficiency, and with a second circuit for controlling exposure timing. Both circuits share and make use of the same photoelectric component. Electronic switches are provided for alternatively connecting the photoelectric component to the first circuit, to determine the sufficiency of scene light, or else for connecting the photoelectric component to the second circuit, to perform an exposure timing operation. A mechanical switch is connected to the electronic switches and is operative for causing the electronic switches to connecting the photoelectric component into one or the other of the two circuits. The photoelectric componet may consist of one or more photoelectric elements.

3,798,664

ELECTRICAL SHUTTER

Motonobu Matsuda, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 42,725, June 2, 1970, abandoned.
This application Oct. 6, 1972, Ser. No. 295,586
Claims priority, application Japan, June 10, 1969, 44-45547
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 6 Claims



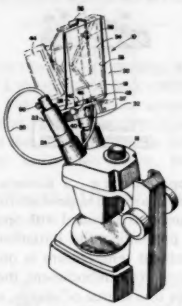
A shutter control device has two delay circuits and a timing circuit including a photoconductive element for determining a delay period as a function of the intensity of the scene light. The timing circuit and one of the delay circuits are actuated simultaneously with the operation of the shutter release and the other delay circuit is operated when the first actuated delay circuit attains a given potential. The shutter closing is initiated when the potentials of the two delay circuits are equal.

3,798,665

APPARATUS FOR ADAPTING A REFLEX CAMERA TO USE WITH A BINOCULAR MICROSCOPE

Vaito K. Eloranta, Needham, and Vivian K. Walworth, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 25, 1972, Ser. No. 247,407
Int. Cl. G03b 29/00
U.S. Cl. 95—12 9 Claims



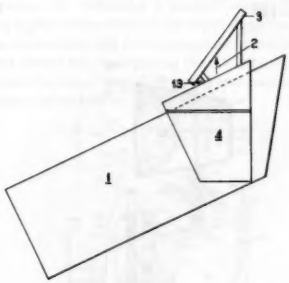
An apparatus for attaching an automatic reflex camera, with a photoelectric exposure control, to a binocular microscope is disclosed. The apparatus includes a tray with a clamp to hold it on one eyepiece of the binocular microscope and a slide clip to retain the camera in the tray. A tube, connected to the tray by a fiber optic light pipe, fits over the other eyepiece and monitors the available light for the photoelectric exposure control.

3,798,666

RECORDING SYSTEMS

Fritz Peter Heller, Bromley, and Brian Frederick Smith, Rainham, both of England, assignors to Elliott Brothers (London) Limited, Chelmsford, England

Filed July 21, 1972, Ser. No. 273,975
Int. Cl. G03b 29/00
U.S. Cl. 95—12.5 5 Claims



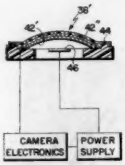
A recording system for a HUD comprises a prism optical system for combining light from the symbol generator and from the scene as viewed by an observer light so that the combined image emitted from the system has the correct orientation, and a camera for mounting on the side of the HUD

3,798,667

TEMPERATURE RESPONSIVE SWITCH FOR USE IN A SELF-DEVELOPING CAMERA

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 5, 1973, Ser. No. 338,322
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 R **12 Claims**



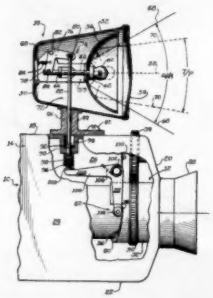
Photographic apparatus, e.g., a camera, for exposing a photosensitive element located in position for exposure within the camera. The camera is provided with temperature responsive structure for preventing the initiation of an exposure cycle when the ambient temperature is outside a predetermined range. In a preferred embodiment, the camera includes a motor connectable to a source of energy, e.g., a battery, for operating various sub-systems of the camera, e.g., a shutter, and the aforementioned temperature responsive structure is a bimetallic structure which functions to connect the motor to the source of energy when the ambient temperature is within the predetermined range and to disconnect the motor from the source of energy when the ambient temperature is outside the predetermined range. In an alternative embodiment, the temperature responsive structure takes the form of a resilient bimetallic member which defines one contact of a normally open switch located in an exposure control circuit. During normal operation, the resilient member is manually flexed to close the switch and initiate an exposure cycle. As the ambient temperature changes to a value outside of the predetermined range, the curvature of the bimetallic member increases to a point whereat the member can no longer be manually flexed into a position wherein the switch will be closed.

3,798,668

CAMERA LIGHT

Rudolf Hartmann, Skokie, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 5, 1972, Ser. No. 295,381
Int. Cl. G03b *17/56*
U.S. Cl. 354—149 **9 Claims**



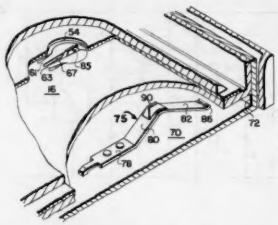
A light for a camera having an adjustable focal length or "zoom" lens. The lens carries a cam surface upon which a cam follower rides. The follower is coupled to a link assembly which supports a light source in the form of a lamp positioned adjacent a reflector. As the focal length of the lens is varied, the follower rides upon the cam transmitting movement to the link assembly. The link assembly in turn shifts the position of the lamp with respect to the reflector. In this manner, the beam width of the camera light is automatically varied to correspond with the field of view of the "zoom" lens.

3,798,669

PHOTOGRAPHIC APPARATUS AND PROCESS

Albert J. Bachelder, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 5, 1972, Ser. No. 286,109
Int. Cl. G03b *17/50*
U.S. Cl. 354—174 **12 Claims**



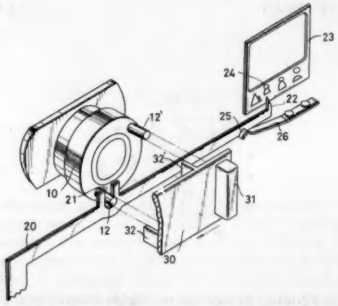
A cassette capable of retaining a plurality of photographic film units in stacked relationship, the cassette comprising access ports through which the terminals of a battery contained in the cassette are capable of contacting integral electrical contacts in the camera. The access ports include battery terminal masks which prevent the accidental completion of an electrical circuit through the battery terminals. The camera is capable of employing the cassette and electrical contacts in the camera are adapted to engage the terminal-masks and contact the battery terminals through the access ports.

3,798,670

CAMERA FOCUSING MECHANISM

Harumi Tanaka, Kobe City, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sept. 21, 1972, Ser. No. 290,924
Claims priority, application Japan, Oct. 20, 1971, 46-9684[U]; June 3, 1972, 47-65824[U]
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **11 Claims**



A camera includes an objective lens which is focussable by a rotatable focus ring and a lens cover which is slideably or swingably supported by the camera for movement between open and closed positions. A lost motion connection couples the cover to the focus ring to urge the focus ring to a predetermine intermediate position with the closing of the cover and

predetermined the coupling ring upon the opening of the cover to permit the manual rotation of the focus ring.

3,798,671

CAMERA SHUTTER MECHANISM COMBINED WITH CONTROL CIRCUIT

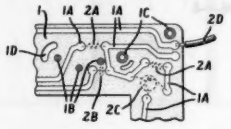
Hiroaki Ishida, Chiba, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,309

Claims priority, application Japan, Apr. 6, 1972, 47-039880

Int. Cl. G03b *9/58*

U.S. Cl. 354—226 **5 Claims**



The operating mechanism of a camera shutter is combined with an electrical circuit for controlling the operation of the shutter in the manner that a circuit board serves as one of the supporting plates for mounting movable parts of the operating mechanism. The circuit board comprises a plate of insulating material laminated with a metal layer, portions of which are selectively etched away to leave patterned portions comprising the circuit. Portions of the metal layer are also left to strengthen and protect the plate in areas where it is engaged by moving parts of the mechanism.

3,798,672

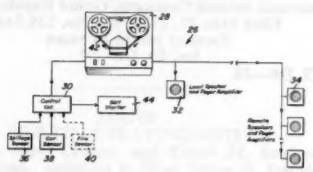
MULTIPLE CONDITION SENSING AND AUDIO WARNING SYSTEM

Joseph Gregg, Jr., Johnstown, Pa., assignor to Jab Company, Inc., Ebensburg, Pa.

Filed June 13, 1972, Ser. No. 262,227

Int. Cl. G08b *19/00*

U.S. Cl. 360—12 **4 Claims**



An audio alarm system for monitoring mining operations, or the like, comprising a multi-track magnetic tape playing apparatus with a playback head selectively movable to any one of a plurality of track positions, an audio system connected to the output of the tape playing apparatus including speakers at selected locations, a plurality of condition sensors each providing a signal representative of a condition being sensed. A control circuit responsive to the condition signals initiates operation of the tape playing apparatus and positions the tape head relative to the proper track on a pre-recorded magnetic tape, whereby the audio message played corresponds to the sensed condition. Automatic shut down of a conveyor or other piece of mining equipment is effected at the same time.

3,798,673

AC BIAS CONTROL RECORDING SYSTEM AND APPARATUS IN A MAGNETIC RECORDING APPARATUS

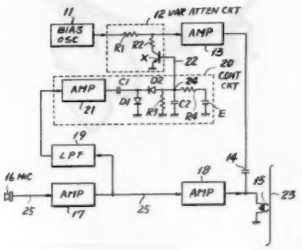
Kazuo Koinuma, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama City, Japan

Filed Dec. 7, 1971, Ser. No. 205,530

Claims priority, application Japan, Dec. 19, 1970, 45-114832

Int. Cl. G11b *5.02, 5/44*

U.S. Cl. 360—66 **4 Claims**



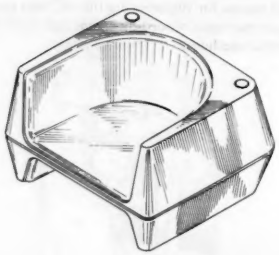
An AC bias control recording system and apparatus are adapted for use in a magnetic recording apparatus in which an input signal is recorded with an AC bias signal superposed thereon. According to the system and apparatus, the value of the current of the AC bias signal is controlled so that it is normally maintained relatively small and becomes relatively large only when the input signal to be recorded includes a low frequency signal component of a high level. The system and apparatus generally comise means for generating the AC bias signal, means for obtaining a control signal from the low frequency signal component in the input signal to be recorded, means for controlling the AC bias signal current by the control signal, and means for superposing the AC bias signal thus controlled upon the input recording signal and recording the same on a magnetic medium.

DESIGNS

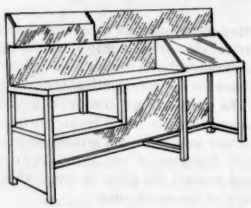
MARCH 19, 1974

230,783
BELT
Jean Walton Lang, Swanton, Vt. 05448
Filed June 5, 1972, Ser. No. 260,070
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—385

230,784
INVERTIBLE BOOSTER CHAIR FOR A CHILD
Raymond A. Lo Turco, Columbus, Ind., assignor to Hamilton Cosco, Inc., Columbus, Ind.
Filed Sept. 21, 1972, Ser. No. 291,003
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—3

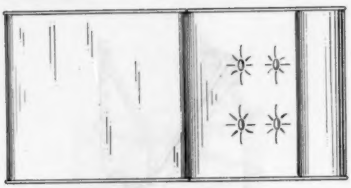


230,785
COMBINED LIGHT TABLE AND WORK BENCH OR THE LIKE
Eugene W. Hawkins and Douglas E. Johnson, Arlington, Tex.
Filed May 3, 1972, Ser. No. 250,108
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—4



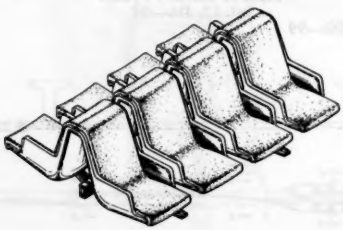
230,786
TRANSIT SEAT
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Mar. 27, 1972, Ser. No. 238,744
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

230,787
CHAIR
Charles F. Smith, 4194 Millersville Road, Indianapolis, Ind. 46205
Filed Mar. 6, 1972, Ser. No. 232,354
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47

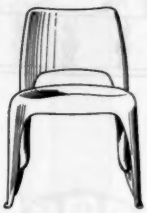


230,788
CHAIR
Warren D. Petersen, St. Charles, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed July 25, 1972, Ser. No. 274,876
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

230,789
MULTIPLE SEATING UNIT
Eliot Noyes, New Canaan, and Ernest M. Bevilacqua, Wilton, Conn., assignors to Eliot Noyes & Associates, New Canaan, Conn.
Filed Dec. 2, 1971, Ser. No. 204,402
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59

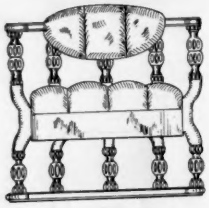


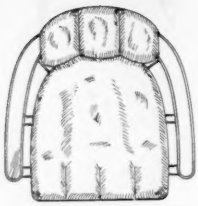
230,790
CHAIR
Karl Luebke, Rheda-Westfalen, Germany, assignor to Luebke KG, Rheda-Westfalen, Germany
Filed Aug. 31, 1972, Ser. No. 285,523
Claims priority, application Germany Mar. 1, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—65



230,791
ARMCHAIR
Alberto Rosselli, Milan, Italy, assignor to Proposals S.R.L. (Varese), Italy
Filed June 8, 1972, Ser. No. 261,130
Claims priority, application Italy Mar. 15, 1972
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—67

230,792
CHAIR
Howard I. Niederman, 3757 S. Ashland Ave., Chicago, Ill. 60609
Filed Jan. 3, 1972, Ser. No. 215,276
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



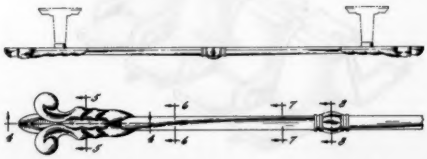


230,793
CHAIR
Edward P. Meyer, Glen Ellyn, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed July 25, 1972, Ser. No. 274,877
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

230,794
GRAB BAR
Jacques Firdmann, Venon, France, assignor to Etablissements Allibert Monestier-de-Clermont, Isere, France
Filed Mar. 23, 1972, Ser. No. 237,611
Claims priority, application France Sept. 24, 1971
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—86

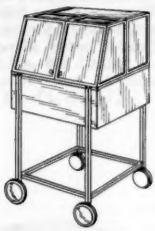
230,795
TOILET TISSUE DISPENSING HOLDER
Carolyn A. Birks, 4313 East-West Highway, Bethesda, Md. 20014
Filed Nov. 24, 1972, Ser. No. 309,189
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97

230,796
TOWEL BAR
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,326
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



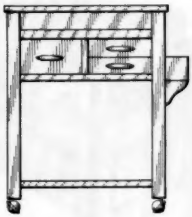
230,797
SUSPENDED WALL SHELVING
Jeffrey K. Slaboden, Flemington, N.J., assignor to Oden Leather Design, Inc.
Filed Sept. 1, 1972, Ser. No. 285,559
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—134

230,798
COMBINED MOBILE BAR AND STORAGE UNIT
Carter Clifford Hoffmann, Lake Forest, and Toivo W. Luoma, Waukegan, Ill., assignors to Carter-Hoffmann Corp.
Filed May 30, 1972, Ser. No. 258,213
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144

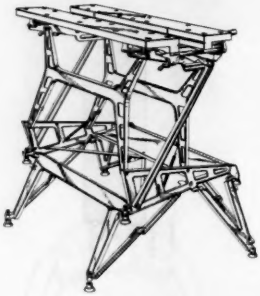


230,799
KITCHEN CABINET
Raymond Loewy, New York, N.Y.
(% C.E.I., 39 Avenue d'Iena, Paris 16e, France)
Original design application May 15, 1970, Ser. No. 23,005, now Patent No. 223,840. Divided and this application Sept. 27, 1971, Ser. No. 153,475
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—150

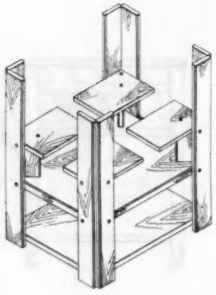
230,800
COMBINED MOBILE STAND AND TRAY UNIT FOR A HAIR STYLIST
Audrey J. Peterson, 29646 Grandifloras Road, Saugus, Calif. 91350
Filed Aug. 16, 1971, Ser. No. 172,378
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—166



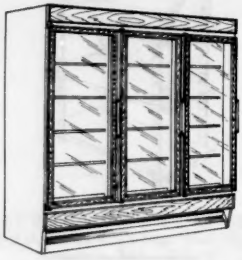
230,801
WORKBENCH
Ronald Price Hickman, Waltham Abbey, England, assignor to Hickman Designs Limited, Waltham Abbey, England
Filed June 30, 1972, Ser. No. 268,012
Claims priority, application Great Britain Dec. 31, 1971
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



230,802
NEWSPAPER HOLDING AND BUNDLING RACK
Masaharu Morita, 3548 Grand View Blvd., Los Angeles, Calif. 90066
Filed Apr. 28, 1972, Ser. No. 248,787
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184

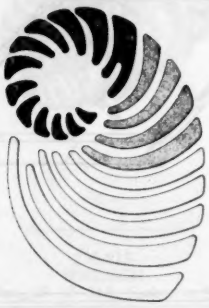


230,803
REFRIGERATED UPRIGHT DISPLAY CASE
Donald A. Musgrave and James M. Bell, Conway, Ark., assignors to UMC Industries, Inc., New York, N.Y.
Filed July 28, 1972, Ser. No. 276,138
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—187

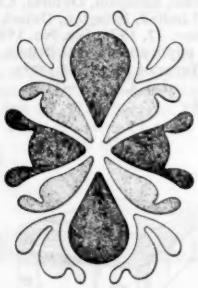


230,804
CRESCENT PILLOW
Josephine C. Lijewski, 2214 N. 21st Place, Phoenix, Ariz. 85006
Filed Nov. 24, 1972, Ser. No. 309,111
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

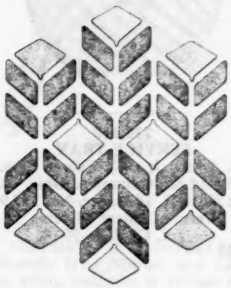
230,805
SET OF BATH TREADS
John R. Howard, Lombard, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,733, Aug. 20, 1971. This application Feb. 7, 1972, Ser. No. 224,380
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



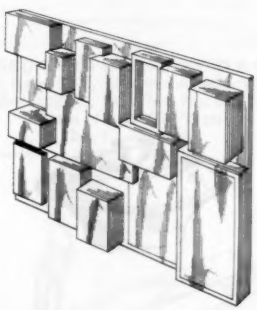
230,806
SET OF BATH TREADS
John B. Penson, De Kalb, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,734, Aug. 20, 1972. This application Feb. 7, 1972, Ser. No. 224,381
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



230,807
SET OF BATH TREADS
John B. Penson, De Kalb, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,735, Aug. 20, 1971. This application Feb. 7, 1972, Ser. No. 224,382
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209

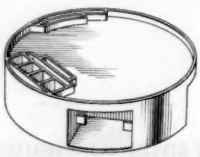


230,808
DISPLAY BOARD FOR PHOTOGRAPHS OR THE LIKE
Thomas G. Edwards, 855 3rd St., Santa Monica, Calif. 90403
Filed Sept. 21, 1972, Ser. No. 290,783
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



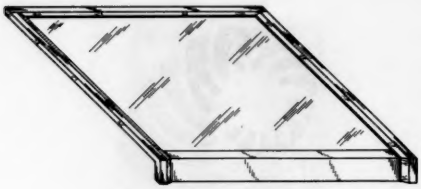
230,809
DISH FOR FRUIT COCKTAIL
Kenneth S. Scholl, 3774 Cork Place, South San Francisco, Calif. 94080
Filed July 14, 1972, Ser. No. 271,780
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—20

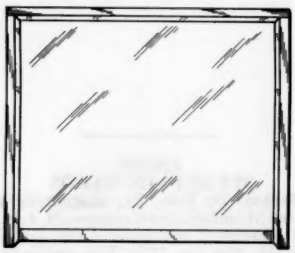
230,810
SERVICE TRAY
James J. Ryan, Jr., % George Wm. Lias, 16 E. Broad St., Columbus, Ohio 43215
Filed Nov. 27, 1972, Ser. No. 309,937
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—27



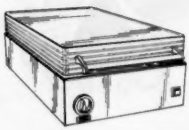
230,811
STEAM COOKING POT
Donald Gordon Cheyne, 47A 12th St., Parktown North, Johannesburg, Transvaal, Republic of South Africa
Filed Jan. 24, 1972, Ser. No. 220,539
Claims priority, application Republic of South Africa July 22, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

230,812
COMBINED STOVE TOP COOKING SURFACE AND FRAME THEREFOR
Robert A. Bruce, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 2, 1971, Ser. No. 168,528
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121

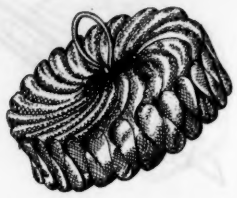




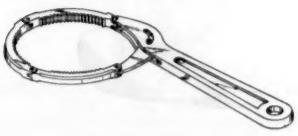
230,813
APPLIANCE FOR HEATING AND COOKING FOODS
William M. Bardeau, Islington, Ontario, Canada, assignor to Bardeau Limited, Islington, Ontario, Canada
Filed Nov. 12, 1971, Ser. No. 198,498
Claims priority, application Great Britain July 28, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121



230,814
NET FABRIC SCOURING PAD
Julie Ann Everts, 2972½ W. Pico Blvd., Los Angeles, Calif. 90006
Filed Sept. 10, 1971, Ser. No. 179,602
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178

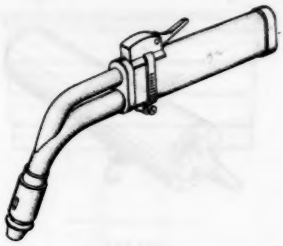


230,815
WRENCH
Koumei Ono, 19–33–315, 5-chome, Narimasu, Tokyo, Japan
Filed Sept. 15, 1972, Ser. No. 289,441
Claims priority, application Japan Apr. 13, 1972
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—22



230,816
DESOLDERING IMPLEMENT OR THE LIKE
William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402
Filed Jan. 25, 1972, Ser. No. 220,722
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

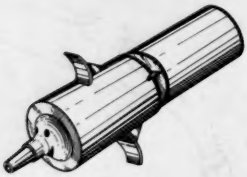
230,817
WELDING GUN
Donald L. Howell, West Milton, and Leo E. Wildenthaler, Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio
Filed July 7, 1972, Ser. No. 269,719
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



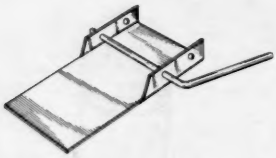
230,818
WELDING GUN NOZZLE
Donald L. Howell, West Milton, and Leo E. Wildenthaler, Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio
Filed July 7, 1972, Ser. No. 269,720
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—30

230,819
COMBINED CAN TAP AND BOTTLE OPENER
Herbert D. Lane, 23 E. 14th, San Angelo, Tex. 76901
Filed Aug. 23, 1972, Ser. No. 283,239
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—40

230,820
AIR BLOWING-VACUUMING IMPLEMENT OR THE LIKE
William S. Fortune, 14250 Dearborn, Panorama City, Calif. 90601
Filed Mar. 15, 1972, Ser. No. 235,103
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51

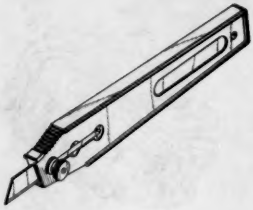


230,821
DEVICE FOR WINDING OR COILING EXPANSION ANCHORS FROM SHEET METAL BLANKS
Arthur C. Wagner, Lebanon, Pa., assignor to Ace-In-The-Hole, Inc., Lebanon, Pa.
Filed Apr. 21, 1972, Ser. No. 246,516
Term of patent 14 years
Int. Cl. D8—*59*
U.S. Cl. D8—59



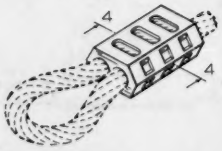
230,822
INSTRUMENT HOLDER
Wolfgang F. Laskowski, 1440 Bay St., Alameda, Calif. 94501
Filed Feb. 11, 1971, Ser. No. 114,751
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—72

230,823
RETRACTABLE KNIFE
Daniel Gluck, Woodmere, N.Y., assignor to Columbia Broadcasting System, Inc.
Filed Oct. 10, 1972, Ser. No. 296,427
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

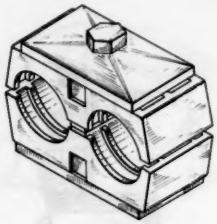


230,824
LETTER OPENER
William L. Goffe, 301 Burnette Road, Webster, N.Y. 14580
Filed Dec. 7, 1972, Ser. No. 312,826
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—102

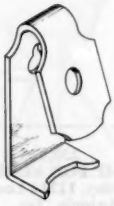
230,825
CLAMP FOR A LOOPED CABLE END
Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.
Filed Aug. 14, 1972, Ser. No. 280,329
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—110



230,826
CLAMP
Arnold Menshen, Beauler-Weg 52, Neuenrade, Westphalia, Germany
Filed July 26, 1972, Ser. No. 275,334
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—230

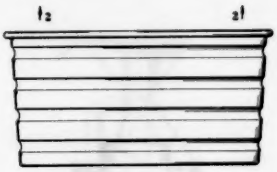


230,827
SUPPORTING CLIP FOR FLOWER POTS OR THE LIKE
Joyce E. Brown, Playa Del Rey, Calif., assignor to C.I.I., Inc., Whittier, Calif.
Filed Dec. 29, 1972, Ser. No. 319,628
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—257

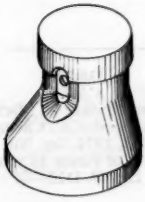


230,828
BOTTLE
Simon Jeruchim, Pomona, N.Y., assignor to Helena Rubinstein, Inc., New York, N.Y.
Filed Apr. 24, 1972, Ser. No. 247,232
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168

230,829
PACKAGING TRAY
Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.
Filed Dec. 20, 1971, Ser. No. 210,292
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

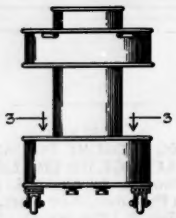


230,830
DISPENSING CLOSURE FOR AN AEROSOL PACKAGE OR THE LIKE
Livingston C. Douglas, Leonia, N.J. (% Colgate-Palmolive Co., 300 Park Ave., New York, N.Y. 10022)
Filed Jan. 5, 1973, Ser. No. 321,173
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258



230,831
COMBINED OVERCAP AND BUTTON ACTUATOR FOR A PRESSURIZED CONTAINER
Herbert R. Carpenter, Kenilworth, Ill., assignor to Seaquist Valve Company, Division of Pittway Corp., Cary, Ill.
Filed Jan. 11, 1973, Ser. No. 322,889
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258

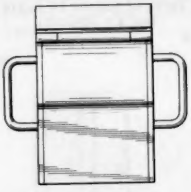
230,832
UTILITY CART FOR HOUSE CLEANING SOLVENTS AND APPLICATORS
Kenneth L. Wells, 5316 Harney Ave., St. Louis, Mo. 63120
Filed Aug. 12, 1971, Ser. No. 171,409
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



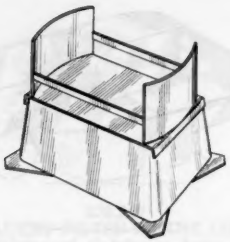
230,833
CART
Dennis Visscher, Muskegon, Mich., assignor to Beatrice Foods Co., Chicago, Ill.
Filed Oct. 2, 1972, Ser. No. 294,377
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29

230,834
COLLAPSIBLE CLEANING CART
Arne Nils Christian Sonnergaard, Lidingo, Sweden, assignor to AB Automatic, Stockholm, Sweden
Filed Feb. 8, 1972, Ser. No. 224,644
Claims priority, application France Dec. 3, 1971
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—30

230,835
RAMP FOR VEHICLES
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 295,001
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—53



230,836
JACK STAND
Ralph Gerald Powers, Golden Valley, Minn., assignor to Royal Industries, Inc., Osseo, Minn.
Filed Sept. 28, 1972, Ser. No. 292,909
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55



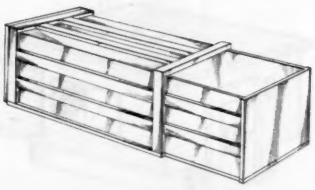
230,837
FRONT-END STAND FOR VEHICLES
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 294,998
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

230,838
VEHICLE STAND
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 294,999
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

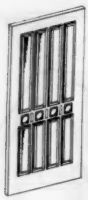
230,839
STAND FOR MOBILE HOMES
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 295,000
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

230,840
RECREATIONAL WATER VEHICLE
Louis W. Schmitz, 518 19th Ave., Gilbertville, Iowa 50634, and Norman E. Hinkel, 3516 Rosehill Terrace, Waterloo, Iowa 50701
Filed Mar. 14, 1972, Ser. No. 234,692
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D12—62

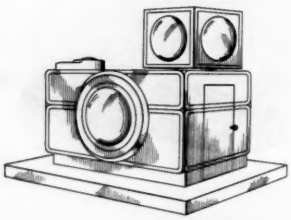
230,841
TRANSPORTABLE REFUSE CONTAINER
Samuel Vincen Bowles, 12039 Branford St., Sun Valley, Calif. 91352
Original design application Dec. 9, 1971, Ser. No. 206,592. Divided and this application Mar. 19, 1973, Ser. No. 342,471
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—98



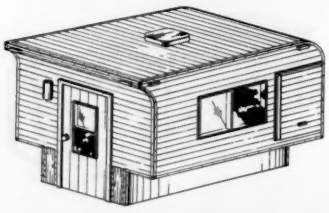
230,842
ORNAMENTAL DOOR
Ronald J. Mathies, Kirkland, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed July 12, 1971, Ser. No. 161,389
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



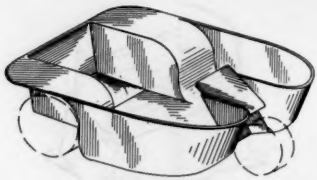
230,843
BUILDING
Ted L. Thimens, 1428 E. Riverside, Decatur, Ill. 62521
Filed Jan. 13, 1972, Ser. No. 217,716
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



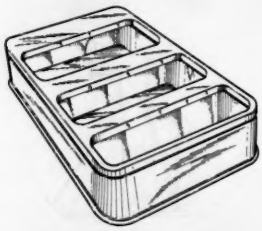
230,844
CAMPER CAB
Charles Alden Sykes, Box 402, Rte. 1, Nyssa, Oreg. 97913
Filed July 21, 1972, Ser. No. 273,883
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3 F



230,845
RUNABOUT VEHICLE BODY
Richard T. Priestley, Los Angeles, Calif., assignor to Motion Industries, Inc., Culver City, Calif.
Filed Aug. 17, 1972, Ser. No. 281,304
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3 R



230,846
WALL BLOCK
Paul C. Friederich, 8 Rue de la Piscine, 67 Bitschwiller, France, and Etienne J. Cramazou, 6 Rue de l'Argonne, 67 Strasbourg, France
Filed Aug. 25, 1972, Ser. No. 283,799
Claims priority, application France Mar. 17, 1972
Term of patent 3½ years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R



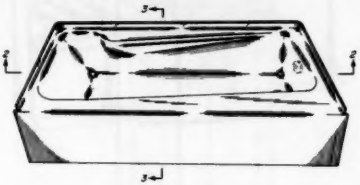
230,847
SHEATH FOR A KNIFE
Frank G. Beddick, Franklinville, N.Y., assignor to Queen Cutlery Company, Titusville, Pa.
Filed Feb. 7, 1972, Ser. No. 224,375
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—13

230,848
FISH LURE
Ewell J. Harris, Rte. 3, Box 135A, Adrian, Mich. 49221
Filed June 21, 1972, Ser. No. 264,790
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

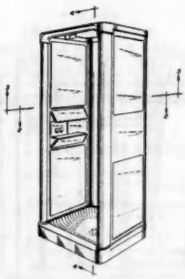
230,849
FAUCET FILTER OR THE LIKE
Hisatomo Takebayasi, Yokohama, Japan, assignor to Kurita Water Industries Ltd., Osaka, Japan
Filed Aug. 11, 1971, Ser. No. 171,033
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

230,850
THREE-WAY TURRET NOZZLE
August H. Pinke, Hastings, Minn., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.
Filed July 3, 1972, Ser. No. 268,471
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

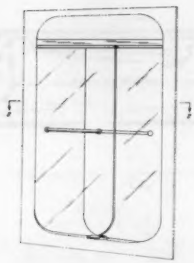
230,851
BATHTUB
James Edwards Chisholm, Safety Harbor, Fla., assignor to Formica Corporation, Cincinnati, Ohio
Filed Sept. 15, 1972, Ser. No. 289,704
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



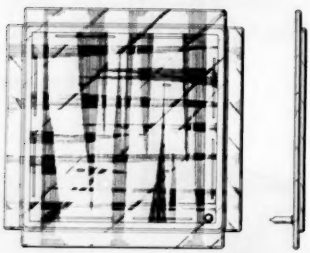
230,852
SHOWER STALL
Morison Stuart Cousins, 74 Victor St., Plainview, N.Y. 11803, and Michael Alan Cousins, 8 Jayne Ave., Huntington, N.N.Y. 11743
Filed Apr. 21, 1972, Ser. No. 246,507
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



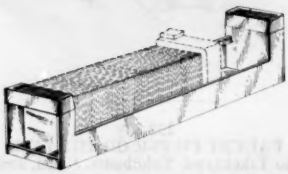
230,853
SLIDING DOOR UNIT FOR SHOWER STALLS OR THE LIKE
Michael Lax, New York, N.Y., assignor to Formica Corporation, Cincinnati, Ohio
Filed Mar. 9, 1971, Ser. No. 122,398
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



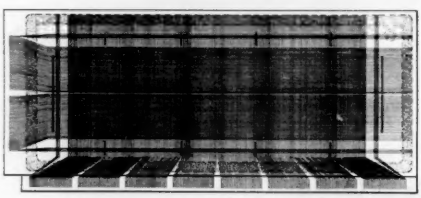
230,854
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Charles W. Salisbury, Rising Sun, and John C. Baker, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed July 1, 1971, Ser. No. 159,082
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

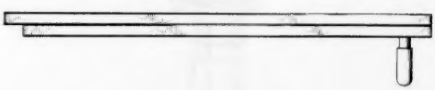


230,855
TRAY FOR ACCOMMODATING DATA PROCESSING CARDS
David M. Wright, 177 Spring St., Shrewsbury, Mass. 01545, and Carl J. Dean, R.F.D. 1, Southbridge, Mass. 01550
Filed Oct. 20, 1971, Ser. No. 191,155
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



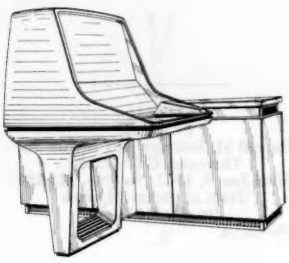
230,856
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Harold J. Hoehn, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed June 7, 1972, Ser. No. 260,688
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C





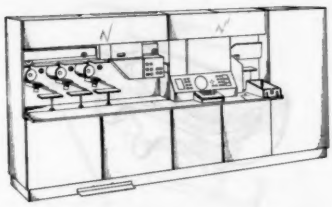
230,857
DESK CALCULATOR
George J. Lampel, Los Angeles, Calif., assignor to Citizen America Corporation, Beverly Hills, Calif.
Filed Nov. 2, 1972, Ser. No. 303,211
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

230,858
INSTRUMENTATION CONSOLE
Roger Howard Ramsey, Akron, Ohio, assignor to North Electric Company, Galion, Ohio
Filed Nov. 8, 1972, Ser. No. 304,603
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

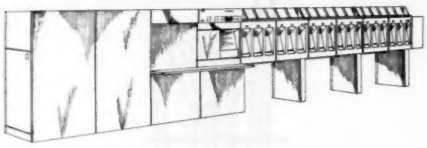


230,859
ELECTRONIC CALCULATOR
Teisuke Kurosu, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1972, Ser. No. 310,927
Claims priority, application Japan June 9, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

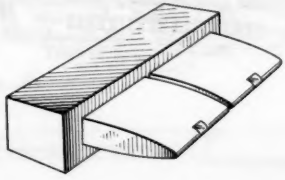
230,860
DOCUMENT READER OR THE LIKE
R. David Keillor and Patrick J. Traglia, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,962
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



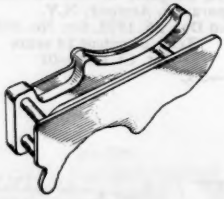
230,861
DOCUMENT SORTER
Clifford I. Shelkofsky, Endwell, and Edward R. Wiener, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,061
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



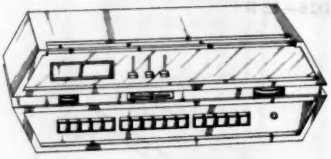
230,862
LIGHT SWITCH
Stephen Kindel, 221 E. 78th St., New York, N.Y. 10024
Filed Jan. 4, 1973, Ser. No. 321,029
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



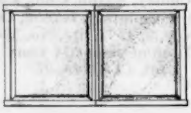
230,863
HOLDER FOR A TELEPHONE RECEIVER
Robert E. Strang, 67751 Oak Road, North Liberty, Ind.
Filed Mar. 8, 1972, Ser. No. 232,992
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



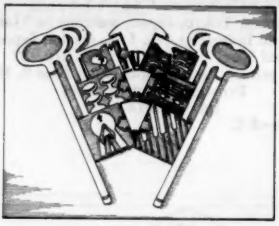
230,864
AUDIO REPRODUCTION UNIT
George E. Lyall, Melrose, Mass., assignor to Automatic Radio Mfg. Co., Inc.
Filed Sept. 5, 1972, Ser. No. 286,273
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



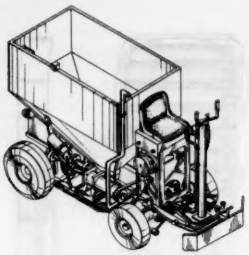
230,865
ENCLOSURE FOR HIGH FIDELITY LOUDSPEAKER SYSTEM
Michael L. Petroff, Los Angeles, Calif., assignor to Equasound Corporation, Los Angeles, Calif.
Filed Mar. 12, 1973, Ser. No. 340,284
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



230,866
PLAQUE
Darrell M. Johnson, 121 E. Hill St., Thomson, Ga. 30824
Filed Jan. 9, 1973, Ser. No. 322,256
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



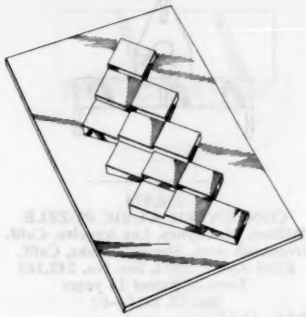
230,867
AUTOMATIC ANIMAL FEEDER OR SIMILAR ARTICLE
David C. Elliot, Rte. 1, Box 24, Star, Idaho 83669
Filed Jan. 5, 1972, Ser. No. 215,714
Term of patent 14 years
Int. Cl. D30—*03;* D15—*03*
U.S. Cl. D30—15



230,868
LITTER RETRIEVER
Peter A. Dorzan, 1 Muir Place, Vauxhall, N.J. 07088
Filed May 20, 1971, Ser. No. 145,593
Term of patent 14 years
Int. Cl. D30—*99;* D8—*05*
U.S. Cl. D30—99

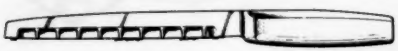
230,869
GOLF CLUB HEAD
Lloyd C. Winter, 1430 Cherrydale Drive, San Jose, Calif. 95125
Filed Dec. 17, 1971, Ser. No. 209,510
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

230,870
GAME BOARD OR SIMILAR ARTICLE
John Kenneth Keim, 1251 St. Michael St., Allentown, Pa.
Filed Apr. 13, 1972, Ser. No. 243,924
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



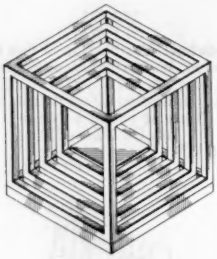
230,871
GOLF BAG
John Michael Worthington, 4 Fox Close, Seisdon, Wolverhampton, England
Filed May 15, 1972, Ser. No. 253,703
Claims priority, application Great Britain Mar. 25, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GB

230,872
CUTTING AND ABRADING BLADE HOLDER
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Mar. 10, 1972, Ser. No. 233,849
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94



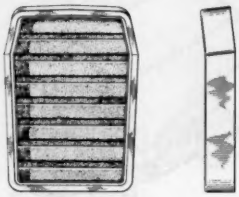
230,873
GOLF PUTTER HEAD
Edward L. Cicero, 52—62 66th St., Maspeth, N.Y. 11378
Filed July 31, 1972, Ser. No. 276,652
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

230,874
CONCENTRIC CUBIC PUZZLE
William H. Baynes, Los Angeles, Calif. (4122 Greenbush Ave., Sherman Oaks, Calif. 91403)
Filed Apr. 7, 1972, Ser. No. 242,285
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M

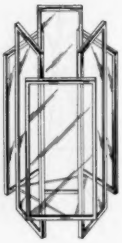


230,875
FLOWER POT
Alvis D. Wilkinson, Box 25118, Oklahoma City, Okla. 73125
Filed May 4, 1972, Ser. No. 250,467
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

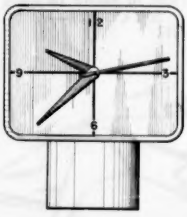
230,876
GRILLE FOR A TRACTOR
Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 21, 1972, Ser. No. 282,188
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5



230,877
CANDLE HOLDER
John L. Alberti, 14024 Hesby St., Sherman Oaks, Calif. 91403
Filed Dec. 29, 1972, Ser. No. 319,624
Term of patent 14 years
Int. Cl. D26—*01, 05*
U.S. Cl. D48—2

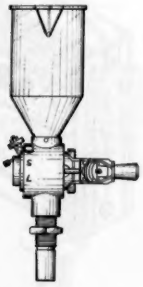


230,878
CLOCK OR SIMILAR ARTICLE
Mark Wallach, 220 E. 63rd St., New York, N.Y. 10021
Filed Feb. 8, 1972, Ser. No. 224,647
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R

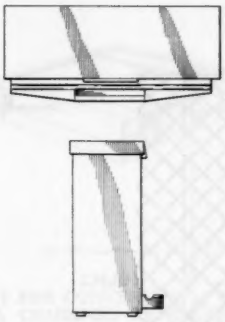


230,879
GAS LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Feb. 16, 1972, Ser. No. 227,003
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

230,880
VOLUMETRIC DISPENSER
Edward Alan Koyen, Parsippany, N.J., assignor to Ohaus Scale Corporation
Filed Feb. 14, 1972, Ser. No. 226,365
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—2 R

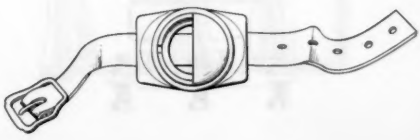


230,881
TOOTHPICK DISPENSER
Francis John Jones, 11035 W. 26th Ave., Lakewood, Colo. 80215
Filed June 16, 1972, Ser. No. 263,679
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D52—2 B

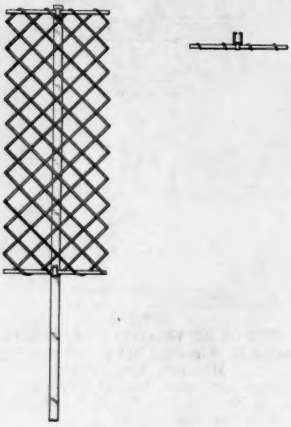


230,882
ICE CUBE VENDING MACHINE
Marion H. Winsett, 1500 Woodhead, Apt. 3, Houston, Tex. 77019
Original design application Jan. 23, 1970, Ser. No. 21,060, now Patent No. 222,704. Divided and this application Dec. 7, 1971, Ser. No. 205,781
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

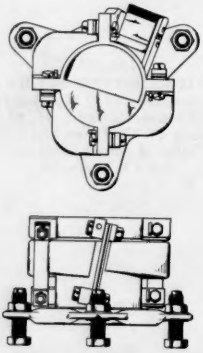
230,883
COMPASS HOLDER FOR SCUBA DIVERS
Owsley H. Brigham, 7510 Morningside Drive, Indianapolis, Ind. 46240
Filed June 17, 1971, Ser. No. 154,259
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 B



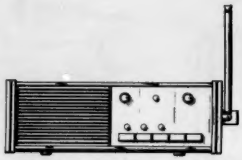
230,884
PLANT SUPPORT
Morris E. Johnson, Batavia, and Joseph Princ, Glen Ellyn, Ill., assignors to Nichols Homeshield Inc., Elmhurst, Ill.
Filed Jan. 27, 1972, Ser. No. 221,482
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D54—2 T



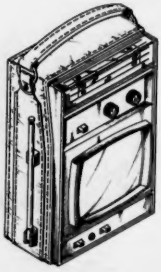
230,885
VIBRATORY PARTS FEEDER
Harold R. Hacker, 522 Woodview Drive, Noblesville, Ind. 46060
Filed June 29, 1972, Ser. No. 267,491
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



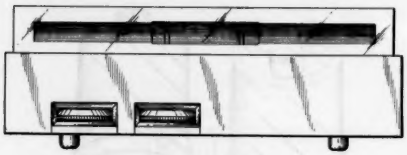
230,886
RADIO RECEIVER
Guy Poisson, Prairie Village, Kans., assignor to Torotel, Inc., Grandview, Mo.
Filed Jan. 17, 1972, Ser. No. 218,633
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



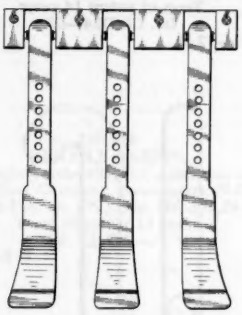
230,887
PORTABLE RADIO
David H. Fink, Dix Hills, N.Y., assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed May 26, 1972, Ser. No. 257,484
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



230,888
RADIO
Morris Fink, Great Neck, N.Y., assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed Dec. 4, 1972, Ser. No. 311,476
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

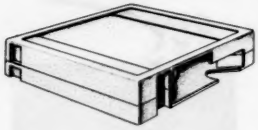


230,889
PEDAL ACTION UNIT FOR PIANOS
Harry C. Kapreilian, 320 Pearl St., Kingston, N.Y. 12401
Filed July 6, 1971, Ser. No. 160,241
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

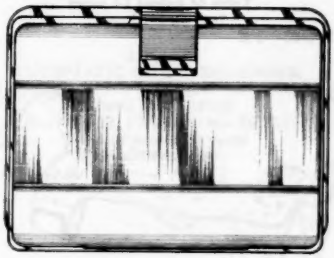


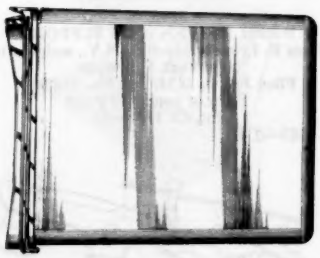
230,890
FILM SPOOL
Masaki Okajima, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 13, 1972, Ser. No. 243,915
Claims priority, application Japan Oct. 20, 1971
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T

230,891
MICROFILM CARTRIDGE
Masaki Muramatsu, Odawara, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 27, 1972, Ser. No. 248,344
Claims priority, application Japan Nov. 6, 1971
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T

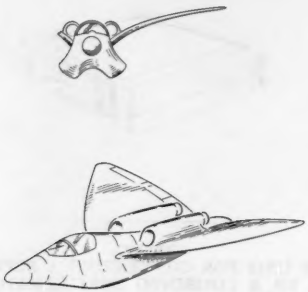


230,892
INSERT UNIT FOR CONVERTING A REFRIGERATOR TO A COMBINED REFRIGERATOR AND FREEZER
Delbert R. Reedy, Los Angeles, Calif., assignor to Kardel Products Corporation, Los Angeles, Calif.
Filed July 1, 1971, Ser. No. 159,096
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—3 R

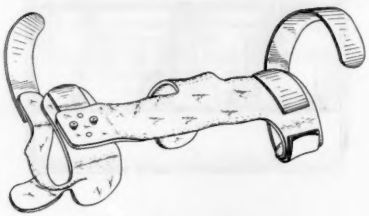




230,893
SUBMERSIBLE AIRCRAFT
Antone Arruda, 12209 S. Eucalyptus Ave., Hawthorne, Calif. 90250
Filed Jan. 17, 1972, Ser. No. 218,637
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 G

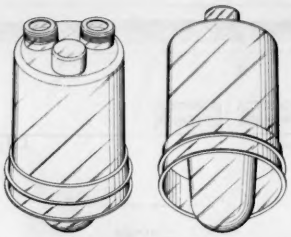


230,894
ARM AND WRIST SUPPORT
Hans R. Lehneis, Merrick, N.Y., assignor to New York University
Filed July 8, 1971, Ser. No. 160,993
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 E

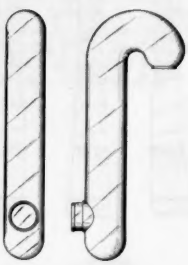


230,895
WRIST DRIVEN ARM SUPPORT
Hans R. Lehneis, Merrick, N.Y., assignor to New York University
Filed July 8, 1971, Ser. No. 160,997
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—1 E

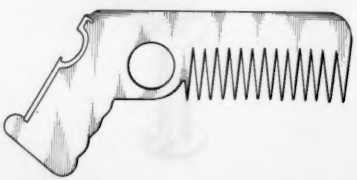
230,896
MEDICAL LIQUID NEBULIZER CONTAINER FOR INHALATION THERAPY
Frank M. Edwards, Pacific Palisades, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Jan. 3, 1972, Ser. No. 215,264
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 N



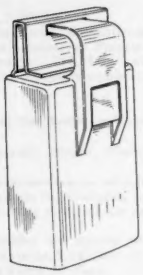
230,897
BLOWER TUBE FOR ULTRASONIC NEBULIZER
Frank M. Edwards, Pacific Palisades, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Jan. 3, 1972, Ser. No. 215,284
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



230,898
COMBINED COMB AND BOTTLE OPENER
Alfred F. Greene, P.O. Box 402, Sanford, Fla. 32771
Filed Nov. 6, 1972, Ser. No. 304,037
Term of patent 14 years
Int. Cl. D28—*03*; D7—*06*
U.S. Cl. D86—8

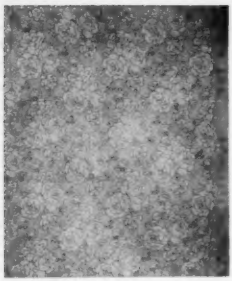


230,899
KEY RECEPTACLE FOR AN AUTOMOTIVE VEHICLE
Leslie Lawrence Cahan, 400 Walmer Road, Park Towers West Penthouse 5, Toronto, Ontario, Canada
Filed July 24, 1972, Ser. No. 274,229
Claims priority, application Canada Feb. 25, 1972
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R

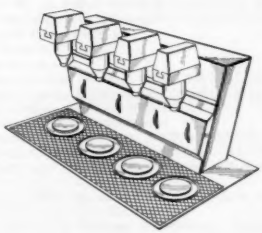


230,900
TEXTILE FABRIC
George H. Hughes, Asheville, N.C., assignor to National Distillers Company, Swannanoa, N.C.
Filed Feb. 14, 1973, Ser. No. 332,294
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 B

230,901
TEXTILE FABRIC
George H. Hughes, Asheville, N.C., assignor to National Distillers Company, Swannanoa, N.C.
Filed Feb. 14, 1973, Ser. No. 332,307
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 J



230,902
AUTOMATIC DRINK DISPENSER
Joel D. Fogel, 10764 N. Kendall Drive, Apt. 14, Miami, Fla. 33156
Filed June 15, 1972, Ser. No. 263,237
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D94—3 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF MARCH, 1974

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AB Carl Munters: *See—*
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Abel, Martin L. Machine for making and injecting lubricant-impregnated wicking material, 3,797,089, Cl. 29-200.00b.

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Acker, Ellsworth George; and Glemza, Rimantas, to Grace, W. R., & Company. Method of preparing thickening grade silica composition. 3,798,174, Cl. 252-317.000.

Ackerman, Stanley C.; and Dunham, Thomas E., to General Electric Company. Vibration resistant lamp. 3,798,490, Cl. 313-311.000.

Ackrell, Jack; Edwards, John A.; and Fried, John H., to Syntex Corporation. Novel C-16,17 spiro-orthoester steroids and preparation. 3,798,217, Cl. 260-239.55d.

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Adler, Irwin L., to General Foods Corporation. Percolation process. 3,798,341, Cl. 426-432.000.

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Adomaitis, Domas, to Continental Can Company, Inc. Tamper-proof closure for a pressurized container. 3,797,689, Cl. 215-253.000.

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Aho, Yrjo. Turning device for the bail of an ear protector. 3,797,045, Cl. 2-209.000.

Ahrend, Mary E. Canted vertex open pit incinerator. 3,797,414, Cl. 110-8.00r.

Aidlin, Samuel S.; and Aidlin, Stephen H. Automatic apparatus for orienting and feeding bottles or like articles having necks. 3,797,640, Cl. 198-33.0aa.

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Aijala, Sulo A.: *See—*
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Aiken, William Ross, to Display Technology Corporation. Display device employing liquid crystal materials. 3,797,914, Cl. 350-160.0lc.

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Ali, Syed Aejaz; and Doherty, Orval Austin, to General Electric Company. Incinerator. 3,797,413, Cl. 110-8.00r.

Alimanestianu, Mihai. Automatic switching system for propelled carriers. 3,797,401, Cl. 104-130.000.

Allabashi, John C., to Hercules Incorporated. Process for producing cross-linked propellants. 3,798,090, Cl. 149-19.400.

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Allocco, Joseph P.; and Landis, Bruce B., to Rowe International Inc. Gum and mint dispenser for merchanising machine. 3,797,701, Cl. 221-155.000.

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Amann, Charles A.; and Rucins, Erik H., to General Motors Corporation. Control method and apparatus for a single shaft turbine with prewhirl of air entering the compressor. 3,797,230, Cl. 60-39.030.

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Azuma, Shingi: *See—*
Nakanishi, Toru; Matsui, Junichi; Yonehara, Setsuji; Aoki, Masahiro; Ishiguro, Kiyonori; Satake, Tatsuo; and Azuma, Shingi, 3,797,666.

Babcock, Clarence E.; and Wilson, James H., to United States Steel Corporation. Temperature sensing device. 3,797,310, Cl. 73-295.000.

Bachelder, Albert J.: *See—*
Land, Edwin H.; and Bachelder, Albert J., 3,798,439.

Bachelder, Albert J., to Polaroid Corporation. Photographic apparatus and process. 3,798,669, Cl. 95-13.000.

Backus, Harold A.: *See—*
Peterson, Reuben W.; and Backus, Harold A., 3,797,860.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Hofmann, Alfred; and Weiss, Hans-Peter, 3,798,115.

Badische Anilin- & Soda-Febrik Aktiengesellschaft: *See—*
Beutel, Peter; Koenig, Karl-Heinz; Dietsche, Wolfram; and Adolphi, Heinrich, 3,798,230.

Baerresen, Richard B.; and Timms, Richard H., to Rohr Industries, Inc. Thrust modulating apparatus. 3,797,785, Cl. 244-53.00r.

Baguelin, Yves E.: *See—*
Brille, Maurice G.; and Baguelin, Yves E., 3,797,562.

Bahm, John R., to Jones & Laughlin Steel Corporation. Method and apparatus for measuring stresses in ferromagnetic material. 3,798,537, Cl. 324-34.000.

Bailey, Albert D., to United States of America, Navy. High frequency passive radio range finder. 3,798,647, Cl. 343-112.00d.

Bailey, Edward A.; and Ordway, James F. Striking bar. 3,797,584, Cl. 173-105.000.

Bailey Meter Company: *See—*
Thompson, Elliott R., Sr., 3,797,316.

Bailey, Paul T.: *See—*
Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert T.; and Semon, Warren L., 3,798,607.

Bailly, Yves A.: *See—*
Fauran, Claude P.; Douzon, Colette; Huguet, Gerard J.; Raynaud, Guy M.; and Bailly, Yves A., 3,798,218.

Bain, Donald Cyril, to National Research Development Corporation. Lateral thrust units. 3,797,527, Cl. 137-832.000.

Baird, Raymond C., Jr.: *See—*
See, Robert B., 3,797,694.

Baitinger, Utz; Najmann, Knut; and Remshardt, Rolf, to International Business Machines Corporation. Monolithic storage arrangement with latent bit pattern. 3,798,621, Cl. 340-173.00r.

Baker Oil Tools, Inc.: *See—*
Berryman, William O., 3,797,591.
Crowe, Talmadge L., 3,797,573.
Kammerer, Archer W., Jr.; and Johnson, Gary R., 3,797,255.
Kammerer, Archer W., Jr., 3,797,259.
Leutwyler, Kurt, 3,797,570.
Mignotte, Henry X., 3,797,572.

Baker, Raymond J. Pool table ball dispenser. 3,797,627, Cl. 194-41.000.

Baker, Robert A., to Aluminum Filter Company. Polygonal shaped fry pan cover and method of making. 3,797,693, Cl. 220-44.00a.

Baktai, Gyorgy; Saly, Sandor; Orlik, Benedek; and Neugebauer, Jeno, to Egyesult Izzolampa es Villamossagi Reszvenytarsasag. Retentive tungsten body containing 20-500 PPM titanium and/or zirconium. 3,798,008, Cl. 29-182.000.

Bal, Gerard Andre: *See—*
Marchandise, Victor Felix; Signoret, Elie Louis; Bal, Gerard Andre; and Barilero, Lucien Eugene, 3,797,393.

Ballentine, Willard, to Palmer Concrete Products, Inc. Adapter. 3,797,865, Cl. 285-175.000.

Balluff, Robert N., to Tenneco Inc. Catalytic converter for exhaust gases. 3,798,006, Cl. 23-288.00f.

Bara, Edwin S., to Warwick Electronics Inc. Two directional tape cassette player. 3,797,780, Cl. 242-100.000.

Barber, James R.; and Finlayson, Thomas J., to Allis-Chalmers Corporation. Lift truck stabilizing apparatus. 3,797,408, Cl. 104-246.000.

Barbour, Roberto, to Cryton Optics, Inc. Box and viewer assembly for slides. 3,797,917, Cl. 350-250.000.

Bard, C. R., Inc.: *See—*
Ericson, Richard E., 3,797,484.

Bardach, Herbert, to Avco Corporation. Bearing for wear detection. 3,797,896, Cl. 308-1.00a.

Barecki, Chester J.; and Karrip, Alexander A., to American Seating Company. Seat for urban mass transit vehicles. 3,797,887, Cl. 297-454.000.

Barenyi, Bela; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Safety steering for motor vehicles. 3,797,601, Cl. 180-78.000.

Barilero, Lucien Eugene: *See—*
Marchandise, Victor Felix; Signoret, Elie Louis; Bal, Gerard Andre; and Barilero, Lucien Eugene, 3,797,393.

Barkin, Stanley M.: *See—*
Dickson, Robert E.; and Barkin, Stanley M., 3,798,169.

Barlow, Gordon A.; and Kramer, Norman, to Glass, Marvin, & Associates. System for operating miniature vehicles. 3,797,404, Cl. 104-149.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Schippers, Heinz; and Lenk, Erich, 3,797,767.

Barnett, Barry Roger Michael; and Seckerson, Clifford Alexander; deceased (by Seckerson, Teresa Agnes; and Seckerson, Michael Alexander), to TRW Inc. Spring clip. 3,797,548, Cl. 151-41.750.

Barrett, Irene J. Two level rotating-arm jumping and ducking exercise device. 3,797,825, Cl. 272-74.000.

Bartenbach, Christian Hermann. Light distributing ceiling structure. 3,798,443, Cl. 240-103.00r.

Bartlett, Philip Lee, to Du Pont de Nemours, E. I., and Company. Polyfluoroalkoxy alkylamido-carboxylic acids and salts thereof. 3,798,265, Cl. 260-534.00m.

Bascoul, Alain Georges Bernard; Bourdes, Jean-Paul; and Moulis, Jacques, to Agence Nationale de Valorisation de la Recherche. Biaxial compression-testing machine. 3,797,303, Cl. 73-94.000.

Bashkov, Vladimir Alexeevich: *See—*
Tseitlin, Aron Yakovlevich; Tikhonov, Sergei Sergeevich; Martynov, Oleg Viktorovich; Makarov, Mikhail Nikolaevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Gorlov, Semen Maximovich; Bashkov, Vladimir Alexeevich; and Sitnov, AnatolyGeorgievich, 3,797,557.

Bassett, Howard D.; Schrage, Franklin E.; and Kirkpatrick, George F., to Union Carbide Corporation. Heat sealed polyester film. 3,798,116, Cl. 161-231.000.

Bateman, Edward L., Limited: *See—*
De Beer, Johan, 3,797,682.

Bates, Homer J.: *See—*
Carstens, Marion R.; and Bates, Homer J., 3,797,405.

BATIR: *See—*
Verbeke, Albert C., 3,798,300.

Batzer, Hans; Habermeier, Joerger; and Porret, Daniel, to Ciba-Geigy AG. N,N'-Diglycidyl-dicarboxylic acid dianilides. 3,798,242, Cl. 260-348.00a.

Bauer, Alfred F., to N L Industries, Inc. Method of making die castings having multi-layer coated surfaces. 3,797,101, Cl. 29-527.300.

Bauer, Benjamin B., to Columbia Broadcasting System, Inc. Apparatus for reproducing quadraphonic sound. 3,798,373, Cl. 179-1.0gq.

Bauer, Ignaz: *See—*

Nitzsche, Siegfried; Bauer, Ignaz; Graf, Werner; and Zeller, Norbert, 3,798,252.

Baurle, Herbert F.; and Masak, Raymond J., to Hazetine Corporation. Angular position determining systems using time scanned arrays. 3,798,645, Cl. 343-102.000.

Bavisotto, Vincent S.; and Tschida, Joseph J., Jr., to Theodore Hamms Company. Neutral fermented alcoholic beverage. 3,798,331, Cl. 426-16.000.

Baxter Laboratories, Inc.: *See*—
Earl, Roscoe T.; and Waldt, Leonard M., 3,798,334.

Baxter, Malcolm John; and Shillito, Terrence Graham, to Fielder Electronics, Limited. Textile yarn treatment machines. 3,798,624, Cl. 340-213.00r.

Bayer Aktiengesellschaft: *See*—
Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, 3,798,292.
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,798,293.
Senning, Alexander; Buchholt, Hans Christian; Bierling, Robert; Steinhoff, Dieter; and Trossmann, Gerhard, 3,798,222.
Werle, Eugen; and Fritz, Hans, 3,798,205.

Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y. Herbicidal 4-trifluoromethyl-4-nitrodiphenyl ethers. 3,798,276, Cl. 260-612.00r.

Bayer, Jack L.; and Breitkopk, Walter J. Machine tool holder and driving means. 3,797,956, Cl. 408-35.000.

Beach, Leland K.: *See*—
Muenker, Adolf H.; Beach, Leland K.; and White, Herschel T., 3,798,086.

Beach, Theodore L., Jr. Wide angle mirror. 3,797,920, Cl. 350-303.000.

Beares, Allen George: *See*—
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Beaver, Edward A.: *See*—
McIlwain, Carl E.; and Beaver, Edward A., 3,798,453.

Beavon, David K., to Parsens, Ralph M., Company, The. Purification of claus plant tail gas by water washing. 3,798,316, Cl. 423-574.000.

Beazley, Audrey Glenn: *See*—
Lopez, Enrique; Spidll, Robert D.; and Beazley, Audrey Glenn, 3,797,423.

Bebick, Paul J.: *See*—
Brooks, Robert A.; and Bebick, Paul J., 3,798,539.

Beck, Charles, Machine Corporation: *See*—
Allen, Philip, 3,797,345.

Beck, Norman G., to Teledyne Industries, Inc. Fuel regulating system for an internal combustion engine. 3,797,470, Cl. 123-140.00r.

Becker, Otto Alfred. Process for welding metal coated sheet structures. 3,798,406, Cl. 219-92.000.

Becker, Otto Alfred. Process for welding sheet metal coated with layers. 3,798,407, Cl. 219-92.000.

Beckert, Adolf F., to Honeywell Inc. Variable flow fluidic transducer. 3,797,528, Cl. 138-46.000.

Beckman & Ullibin AB: *See*—
Hemgren, Sven Anders, 3,797,795.

Beckman, Melvin H., to Keystone Consolidated Industries, Inc. Flush mounted handle, latch bolt, lock and housing assembly. 3,797,870, Cl. 292-128.000.

Becton, Dickinson and Company: *See*—
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,797,145.

Bednarski, Thaddeus Eugene: *See*—
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Beech-Nut, Inc.: *See*—
Dobry, Reuven; and Cassamassima, Salvatore, 3,797,642.

Behrens, Norman A., to Creston Manufacturing Co., Inc. Material mixer. 3,797,807, Cl. 259-41.000.

Beijer, Jan. Kite structure. 3,797,788, Cl. 244-153.00r.

Beil, Franz: *See*—
Martin, Erwin; and Beil, Franz, 3,798,392.

Belart, Juan; Beller, Hans-Albert; and Burgdorf, Jochen, to ITT Industries, Inc. Multi-circuit brake system. 3,797,246, Cl. 60-555.000.

Bell & Howell Company: *See*—
Hadzimahalis, Theodore M., 3,797,909.
Hartmann, Rudolf, 3,798,668.

Bell, Allan J.: *See*—
Torpie, John D.; Bell, Allan J.; Gorham, Michael L.; and Keating, Walter G., 3,798,576.

Bell Telephone Laboratories, Incorporated: *See*—
Broadhead, John, 3,798,069.
Cheney, Glen Trenton, 3,798,466.
Coyne, James Christopher; McCoy, Robert Gordon; and Smith, Arnold Ray, 3,797,586.
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Fournier, Paul Richard, 3,798,145.
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Marcatili, Enrique Alfredo Jose, 3,798,099.
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Bell-Mark Corporation: *See*—
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Belleau, Claude: *See*—
Allardyce, Gordon L.; Roy, Amedee; and Belleau, Claude, 3,797,087.

Beller, Hans-Albert: *See*—
Belart, Juan; Beller, Hans-Albert; and Burgdorf, Jochen, 3,797,246.

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Bemberg S.p.A.: *See*—
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Gallina, Oreste, 3,798,297.

Bement, Laurence J., to United States of America, National Aeronautics and Space Administration. Totally confined explosive welding. 3,797,098, Cl. 29-470.100.

Bemis, Alan G.; Darin, John K.; and Hoff, Melvern C., to Standard Oil Company. Selective separation of xylenes by crystal size classification. 3,798,282, Cl. 260-674.00a.

Bendel, Lee P., to Carpenter Technology Corporation. Method of making stainless steel containing borides. 3,798,075, Cl. 148-12.000.

Bendix Corporation, The: *See*—
Carleton, William A., 3,797,522.
Carp, Ralph W., 3,797,894.
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, 3,798,650.

Bendler, Hellmut: *See*—
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, 3,797,853.

Benoit, Roland A.; and Duprey, Richard H., to Interroyal Corporation. Shock and drainage mechanism. 3,797,050, Cl. 5-62.000.

Benoit, Roland A.; and Guillot, Edmond P., to Interroyal Corporation. Adjustable bed motor mount. 3,797,273, Cl. 64-4.000.

Benson, David E. Bearing puller. 3,797,095, Cl. 29-261.000.

Benwell, Dale D. Sub-conscious mind controlled amusement device. 3,797,832, Cl. 273-161.000.

Berdy, Janos: *See*—
Toth-Sarudy, Eva; Horvath, Istvan; Gyimesi, Jozsef; Ott, Istvan; Alfoldi, Laszlo; Berdy, Janos; Koczka, Istvan; Scholtz, Vilma; Szell, Valeria; and Neetomori, Eva Laszio, 3,798,129.

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Coronelli, Carolina; Gallo, Giangualberto; and Beretta, Graziella, 3,798,130.

Berger, Richard R.: *See*—
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Berkeley & Company, Inc.: *See*—
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Berkey-Colortran, Inc.: *See*—
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Berlyn Corporation, The: *See*—
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Bermanseder, Norbert: *See*—
Bermanseder, Robert; and Bermanseder, Norbert, 3,797,881.

Bermanseder, Robert; and Bermanseder, Norbert, to Daimler-Benz Aktiengesellschaft. Bus. 3,797,881, Cl. 296-28.00a.

Berney, Jean-Claude, to Golay, Bernard, SD. Circuit for synchronizing a mechanical resonator. 3,798,521, Cl. 318-128.000.

Berry, Jack, to Burroughs Corporation. Maintaining ribbon tension with tapered-shunt reed switch control apparatus. 3,797,773, Cl. 242-75.430.

Berry Metal Company: *See*—
Rymarchyk, Nicholas M., Jr.; Berry, Walter V.; and Berry, William W., 3,797,814.

Berry, Walter V.: *See*—
Rymarchyk, Nicholas M., Jr.; Berry, Walter V.; and Berry, William W., 3,797,814.

Berry, William W.: *See*—
Rymarchyk, Nicholas M., Jr.; Berry, Walter V.; and Berry, William W., 3,797,814.

Berryman, William O., to Baker Oil Tools, Inc. Trigger mechanism for down-hole adjustable hydraulic fishing jar. 3,797,591, Cl. 175-296.000.

Bertaud, Francois X., to Borg-Warner Corporation. Lubricating method and apparatus. 3,797,609, Cl. 184-7.00r.

Bertin, Jean Henri; and Croix-Marie, Francis Marie Jean, to Societe de: L"'Aerotrain". Trim-correcting facility for ground effect machines. 3,797,399, Cl. 104-23.0fs.

Bertolacini, Ralph J.; and Brennan, Harry M., to Standard Oil Company. Reforming with a non-noble-metal-mordenite catalyst. 3,798,154, Cl. 208-65.000.

Beutel, Peter; Koenig, Karl-Heinz; Dietsche, Wolfram; and Adolphi, Heinrich, to Badische Anilin- & Soda-Febrik Aktiengesellschaft. 0,0-Dialkyl-0-[-oxa-2,4-diazolidinon-5-yl-3]-thionophosphates. 3,798,230, Cl. 260-307.00a.

Beyer, Klaus Dietrich, to International Business Machines Corporation. Method for diffusing As into silicon from a solid phase. 3,798,081, Cl. 148-188.000.

Bicron Corporation: *See—*
Menefee, Julius H.; Novak, William P.; and White, John A., 3,798,448.

Bierling, Robert: *See—*
Senning, Alexander; Buchholt, Hans Christian; Bierling, Robert; Steinhoff, Dieter; and Trossmann, Gerhard, 3,798,222.

Biessener, Richard M., to Nutting Truck and Caster Company. Tow line truck and brake system. 3,797,406, Cl. 104-172.0bt.

Bigsby, Floyd W.: *See—*
Reed, William B.; and Bigsby, Floyd W., 3,797,502.

Bilger, George H. Moving-implement control-guard system. 3,797,579, Cl. 172-42.000.

Binard, Pierre; Defosse, Georges; and Jawuerie, Jean Marie, to Elphiac. Plasma furnace. 3,798,489, Cl. 313-231.000.

Bird, Jack Raymond: *See—*
Hooke, Noel Harry; Steel, Thomas; and Bird, Jack Raymond, 3,797,236.

Bitar, Lou S.; Smallwood, David S.; and Lang, Elliot N., to Atlantic Richfield Company. Non-catalytic oxidative dehydrogenation process. 3,798,283, Cl. 260-683.300.

Bittner, W. Ray, to Gould Inc. Heating element assembly. 3,798,417, Cl. 219-532.000.

Black and Decker Manufacturing Company, The: *See—*
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Blackham, Kenneth K.: *See—*
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Blackman, Arthur W.: *See—*
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Blake, Edward R.: *See—*
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Blanchard, Robert L.; Sherburne, Arthur E.; and Williams, Robert A., to Trans-Sonics, Inc. Fluid level meter. 3,797,311, Cl. 73-304.00c.

Blank, Werner Josef: *See—*
Parekh, Girish Girdhar; and Blank, Werner Josef, 3,798,193.

Blankenship, Milton D. Poultry handling system. 3,797,460, Cl. 119-17.000.

Blattner, Hans; and Schindler, Walter, to Ciba-Geigy Corporation. Thiepin derivatives. 3,798,237, Cl. 260-332.500.

BLH Electronics, Inc.: *See—*
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Bliss, Burit E.; Dervan, James T., III; Griffith, Leroy E.; Pung, Bruce D.; Thorpe, Robert A.; and Vogel, Norman A., to International Business Machines Corporation. Multiplexed intelligence communications. 3,798,610, Cl. 340-172.500.

Bliss, Denys Stanley, to Bliss Pendair Limited. Air-cushion vehicles. 3,797,398, Cl. 104-23.0fs.

Bliss Pendair Limited: *See—*
Bliss, Denys Stanley, 3,797,398.

Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, to United States of America, Air Force. Pulsed doppler radar. 3,798,643, Cl. 343-8.000.

Blum, Albert. Alignment means for an immersible pump. 3,797,970, Cl. 417-360.000.

Blunden, Donald J., to Whitehead & Kales Company. Loading and securement system for rail cars. 3,797,410, Cl. 105-368.00r.

Bochman, Raymond A.; Dessauer, Ralph G.; and Jen, Dian P., to International Business Machines Corporation. Method and apparatus for producing large diameter monocrystals. 3,798,007, Cl. 23-301.0sp.

Bocker, Peter. Method and apparatus for demodulation of phase difference modulated data signals. 3,798,561, Cl. 329-104.000.

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Bohn, Gerhard: *See—*
Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, 3,797,403.

Boisen, Martin H.; Crevar, Steve, Jr.; and Morris, Robert T., to Rohr Industries, Inc. Accumulator type slat conveyor. 3,797,635, Cl. 198-75.000.

Boissier, Jacques Robert; and Ratouis, Roger, to Societe Anonyme dite: Societe Industrielle pour la Fabrication des Antibiotique (S.I.F.A.). 9-Fluoro-11β,21-dihydroxy-16α,17-(2-propenylidenedioxy)-pregna-1, 4-diene-3,20-dione and derivatives thereof. 3,798,216, Cl. 260-239.55d.

Boissin, Jean-Claude: *See—*
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Bolex International SA: *See—*
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Bollhoff & Co.: *See—*
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Bonami, Ernest; and Clemens, Ogden A., to Swift & Company. Method and apparatus for segmenting extruded product. 3,797,070, Cl. 17-32.000.

Bondarev, Konstantin Timofeevich; Golius, Tamara Efimovna; Minakov, Anatoly Gavrilovich; Minakov, Vladimir Anatolievich; and Strekalov, Anatoly Vastlievich. Method of manufacturing crystalline glass articles. 3,798,014, Cl. 65-33.000.

Bone, Arnold Roberts, to Dennison Manufacturing Company. Apparatus for dispensing fasteners. 3,797,722, Cl. 227-67.000.

Bonet, Claude: *See—*
Foex, Marc; Delmas, Robert; and Bonet, Claude, 3,798,408.

Boone, Salomon; and Van der Heiden, Frans, to U.S. Philips Corporation. Package containing electric components. 3,797,655, Cl. 206-325.000.

Boothe, Clyde O., to Farr Company. Automated spot welding method and apparatus. 3,798,405, Cl. 219-56.000.

Borden, Inc.: *See—*
Cummin, Alfred Samuel; Daun, Henryk; Gilbert, Seymour George; and Henig, Yair, 3,798,333.

Borg-Warner Corporation: *See—*
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Newton, Alwin B., 3,797,266.

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Borrello, Giuseppe, to Colgate-Palmolive Company. Extruder output multiplier. 3,797,982, Cl. 425-198.000.

Bosch, Robert, G.m.b.H.: *See—*
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Botros, Raouf: *See—*
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Bottaccio, Giorgio; Chiusoli, Paolo; Coassolo, Alfredo; and Carletti, Vittorio, to Montecatini Edison S.p.A. Process for preparing citric acid. 3,798,266, Cl. 260-535.00p.

Boudakian, Max M.; and Chiras, Stanley J., to Olin Corporation. Method for the preparation of difluoropyridines. 3,798,228, Cl. 260-290.0hl.

Boudreau, Robert Joseph. Smyth Manufacturing Company, The Seaming tool. 3,797,430, Cl. 113-55.000.

Bourdale, Lucien R. Method of separating particles contained in a laden fluid, and a dynamic separator for performing this method. 3,797,663, Cl. 210-78.000.

Bourdes, Jean-Paul: *See—*
Bascoul, Alain Georges Bernard; Bourdes, Jean-Paul; and Moulis, Jacques, 3,797,303.

Bourne, Hector Roland; and Brown, Bruce Cameron. Method for affecting a condition of a boundary layer of gas or vapour at a surface of a body of liquid. 3,797,998, Cl. 21-60.50r.

Boutcher, Andrew Graham; and Busler, Willard Le Roy, to AMP Incorporated. Terminal insertion apparatus. 3,797,090, Cl. 29-203.00b.

Bowdish, Meredith E. Unified smog pump and alternator. 3,797,242, Cl. 60-307.000.

Bowerman, William R. Device for metering toothpaste or the like. 3,797,711, Cl. 222-219.000.

Braas & Co. GmbH: *See—*
Amoser, Hans, 3,798,064.

Bracken, Ronald C.; Harper, James G.; Paddock, Arnold D.; and Morrison, Wilson G., to Texas Instruments, Incorporated. Anodic passivating processes for integrated circuits. 3,798,135, Cl. 204-15.000.

Brady, William Jackson. Amphibious vehicle. 3,797,056, Cl. 9-1.00t.

Brafman, Marek; Godeau, Alain; Laverlochere, Jean; and Lecomte, Jean-Luc, to Commissariat a l'Energie Atomique and Entreprise de Recherches et d'Activites Petrolieres elf. Method of remote analysis of the composition of a medium and a device for carrying ot said method. 3,798,455, Cl. 250-256.000.

Braid, Milton, to Mobil Oil Corporation. Lubricant compositions. 3,798,166, Cl. 252-51.50a.

Brainin, Herbert, to Vitredent Corporation. Dental implant. 3,797,113, Cl. 32-10.00a.

Brandstatter, Georg: *See—*
Brandstatter, Horst, 3,798,383.

Brandstatter, Horst, to Brandstatter, Georg. Ringing device for an electrical telephone. 3,798,383, Cl. 179-84.00r.

Brandt, Edison R., to Polaroid Corporation. Photograph album page. 3,797,152, Cl. 40-158.00r.

Brandt, Vernon J. Transporting and dumping apparatus. 3,797,684, Cl. 214-313.000.

Brane, Douglas K.: *See—*
Brane, Earl P.; Brane, Douglas K.; Marsh, Robert E.; and Hammond, Holton H., 3,797,523.

Brane, Earl P. Time variable valve apparatus. 3,797,323, Cl. 74-55.000.

Brane, Earl P.; Brane, Douglas K.; Marsh, Robert E.; and Hammond, Holton H. Low pressure drop water softener valve assembly with dual pistons. 3,797,523, Cl. 137-599.100.

Braum, C. F., & Co.: *See—*
Soehrens, John E., 3,797,877.

Braun Aktiengesellschaft: *See—*
Anna, Otta; and Luberichs, Albert, 3,797,206.

Braun, Dieter, to Felten & Guilleaume Kabelwerke Aktiengesellschaft. Method and arrangement for making SZ-twisted cables. 3,797,217, Cl. 57i34.0at.

Brechbuhl, Heinrich. Centrifugal fan. 3,797,961, Cl. 415-156.000.

Breeden, Earl W., to Garnette, Marie J. Pet house. 3,797,461, Cl. 119-19.000.

Breitenstein, Charles T.: *See—*
Nicolaus, Frank G.; and Breitenstein, Charles T., 3,797,175.

Breitkopk, Walter J.: *See—*
Bayer, Jack L.; and Breitkopk, Walter J., 3,797,956.

Brennan, Harry M.: *See—*
Bertolacini, Ralph J.; and Brennan, Harry M., 3,798,154.

Breslow, Jeffrey: *See—*
Glass, Marvin I.; McKay, Robert; and Breslow, Jeffrey, 3,797,164.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Board game apparatus. 3,797,830, Cl. 273-131.00a.

Bress, Dellason F.; and Petrarca, Carmen A., to Foster Wheeler Corporation. Pollution elimination for fertilizer process. 3,798,021, Cl. 71-28.000.

Brettrager, Norman A. Apparatus for mounting a winch on a trailer. 3,797,681, Cl. 214-85.500.

Brichard, Claude, to Glaverbel S.A. Glass sheet drawing method and apparatus. 3,798,015, Cl. 65-95.000.

Bridger, Floyd R., Jr. Minimum tillage planter. 3,797,418, Cl. 111-73.000.

Bridgestone Tire Co. Ltd.: *See—*
Kaneko, Yoshio; Matsunaga, Tsutomu; Watabe, Yoji; and Toki, Shigeyuki, 3,798,200.

Bridgestone Tire Company, Limited: *See—*
Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,798,190.

Bright, William Townsend. Laminating apparatus. 3,798,107, Cl. 156-500.000.

Brille, Maurice G.; and Baguelin, Yves E., to Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem. Cooling systems of supercharged diesel engines. 3,797,562, Cl. 165-39.000.

Brimhall, Ray S., to Walker Bank and Trust Company, administrator with will annexed of the estate of said Brimhall, (deceased). Hydraulic system and mechanical latch therefor. 3,797,882, Cl. 296-28.00c.

Brindley, Robert E., to Union Carbide Corporation. Push button switching module for flashlights. 3,798,440, Cl. 240-10.660.

Brink, Edwin H.; and Houston, Robert K., to FMC Corporation. Capsule assembly method and machine. 3,797,195, Cl. 53-37.000.

Brion, Alison C. Barbecue meat holder. 3,797,379, Cl. 99-421.00h.

Bristol, Edgar H., II, to Foxboro Company, The. Pattern evaluation method and apparatus for adaptive control. 3,798,426, Cl. 235-151.100.

British Columbia Research Council: *See—*
Wright, Robert H., 3,798,318.

British Non-Ferrous Metals Research Association, The: *See—*
Reynolds, Patricia May; and Diamand, Roger David, 3,798,450.

Broadhead, John, to Bell Telephone Laboratories, Incorporated. Battery structure incorporating chlorine scavenger. 3,798,069, Cl. 136-26.000.

Brody, Albert C.; and Lipkin, Edward, to Nyvel Corporation. Method and apparatus for electrostatically coating an object. 3,798,048, Cl. 117-17.000.

Bronzini, Bruno. Fabricating article transfer apparatus for machine tools. 3,797,638, Cl. 198-33.oad.

Brooks, Dell Royce, to Telephone Industries, Inc. Connector terminal dial repulser. 3,798,379, Cl. 179-16.00e.

Brooks, Robert A.; and Bebick, Paul J., to Magnetic Analysis Corporation. Pulse eddy current testing apparatus using pulses having a 25% duty cycle with gating at pulse edges. 3,798,539, Cl. 324-40.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Sakawa, Katsuaki, 3,797,422.

Brouneus, Harold A., to Corning Glass Works. Temperature control systems. 3,798,416, Cl. 219-505.000.

Brown and Williamson Tobacco Corporation: *See—*
Hughes, Ivor Wallace; and Green, Sydney James, 3,797,504.

Brown Boveri & Company Limited: *See—*
Pisecker, Hans; and Schicht, Werner, 3,798,522.

Brown, Bruce Cameron: *See—*
Bourne, Hector Roland; and Brown, Bruce Cameron, 3,797,998.

Brown Company: *See—*
Buttery, Kenneth T.; and Haas, Richard C., 3,797,728.

Brown, Donald R.; and Masopust, Otto T., Jr., to Western Electric Company, Incorporated. Method and apparatus for winding metallized-type capacitors. 3,797,771, Cl. 242-56.100.

Brown, Ronald E.: *See—*
Cammarata, Vincent N.; Brown, Ronald E.; and Garfinkle, David R., 3,797,391.

Brown, Sidney F.: *See—*
Neely, Joseph E.; and Brown, Sidney F., 3,798,042.

Browne, Lawrence T. Soldering method and apparatus for ceramic circuits. 3,797,100, Cl. 29-471.100.

Browning, Iben; and Johnson, Peter R. Recording method and apparatus utilizing light energy to move record forming material onto a record medium. 3,798,365, Cl. 178-6.60a.

Browtzki, Kurt: *See—*
Herzhoff, Peter; Gref, Hans; Maus, Fritz; Browtzki, Kurt; Friedsam, Josef; Wasser, Willi; and Schweicher, Wolfgang, 3,797,551.

Broyhill Co., The: *See—*
Kommers, William J.; and Stewart, Clarence E., 3,797,743.

Brudy, Peter E., to Dominion Auto Accessories Limited. Lamp construction. 3,798,444, Cl. 240-106.00r.

Brugger, Max; Riniker, Bernhard; and Rittel, Werner, to Ciba-Geigy Corporation. Analogues of human thyrocalcitonin modified with corresponding amino acids of salmon thyrocalcitonin and derivatives thereof. 3,798,203, Cl. 260-112.500.

Brument, Max, to Herve et Fils Papeteries du Sentier (Societe Anonyme). Skirt convertible into a tote bag. 3,797,043, Cl. 2-69.500.

Brunes, Tons Jean. Supporting roller for belt and roller conveyors. 3,797,082, Cl. 29-116.00r.

Brunk, Milton J.: *See—*
Stout, Richard W.; and Brunk, Milton J., 3,797,850.

Brunner, Mathias, to Zumbach Electronic Automatic. Device for measuring the position of a conductor in a cable. 3,797,121, Cl. 33-174.00q.

Bruson, Herman A.; and Gould, Henry, to Milchem Incorporated. Detergent builder composition. 3,798,183, Cl. 252-557.000.

Buchholt, Hans Christian: *See—*
Senning, Alexander; Buchholt, Hans Christian; Bierling, Robert; Steinhoff, Dieter; and Trossmann, Gerhard, 3,798,222.

Buckbee-Mears Company: *See—*
Miller, Gerald M.; and Munter, George M., 3,797,934.

Buckeye Steel Castings Company: *See—*
Reynolds, David J., 3,797,674.

Buckingham, Robert L.; Davis, Jonathan B.; and Herd, Harold H., to International Business Machines Corporation. Optical scanner including an aperture design for non-synchronous detection of bar codes. 3,798,458, Cl. 250-569.000.

Budahn, Burnell E. Cheese mold with hinged side walls. 3,797,980, Cl. 425-84.000.

Buehler, Walter Erwin; and Lunden, Clarence David, to Boeing Company, The. Continuous-wave, multiple beam airplane landing system. 3,798,646, Cl. 343-109.000.

Buhler, Andreas, to Castle Brass Works (Proprietary), Limited. Vacuum breaker. 3,797,515, Cl. 137-218.000.

Bullard, E. D., Company: *See—*
Raschke, Herbert A., 3,797,041.

Bullock, Thomas B.: *See—*
Simon, James B.; and Bullock, Thomas B., 3,798,430.

Bunker-Ramo Corporation, The: *See—*
Healy, Robert M.; and Hovey, Ralph J., 3,797,108.

Bunn, Clinton O., to Col-Mont Corporation. Process for removing oil and other organic contaminants from water. 3,798,158, Cl. 210-33.000.

Buonaura, Anthony: *See—*
Chisholm, James Edward; and Buonaura, Anthony, 3,797,048.

Burckhardt, Manfred H.; and Krohn, Hellmut, to Daimler-Benz Aktiengesellschaft. Brake force control system for vehicles. 3,797,893, Cl. 303-21.0be.

Burgdorf, Jochen: *See—*
Belart, Juan; Beller, Hans-Albert; and Burgdorf, Jochen, 3,797,246.

Burlington-Cornwell Industries Incopropated: *See—*
Osbourne, Glen R., 3,797,824.

Burnett, John. Tiller controls for small boats. 3,797,441, Cl. 114-172.000.

Burnham, Benjamin K., to Thayer, Inc. Folding stroller. 3,797,848, Cl. 280-36.00b.

Burnham, Walter J.: *See—*
Zollweg, Robert J.; Blackham, Kenneth K.; and Burnham, Walter J., 3,798,487.

Burns, Robert V.; and Tarr, Lloyd A., to GTE Automatic Electric Laboratories, Incorporated. Selective D.C. isolation circuit. 3,798,470, Cl. 307-252.00r.

Burroughs Corporation: *See—*
Berry, Jack, 3,797,773.

Burtis, Carl A.: *See—*
Anderson, Norman G.; Burtis, Carl A.; Johnson, Wayne F.; Mailen, James C.; and Scott, Charles D., 3,798,459.

Burton, Douglas Gordon: *See—*
Fenne, Ivor; and Burton, Douglas Gordon, 3,797,753.

Bushnell, Roger Brian. Coating of surfaces with powder. 3,797,457, Cl. 118-630.000.

Busker, Leroy H.; and Francik, Carl J., to Beloit Corporation. Wrapped roll press. 3,798,121, Cl. 162-205.000.

Busler, Willard Le Roy: *See—*
Boutcher, Andrew Graham; and Busler, Willard Le Roy, 3,797,090.

Butler David Sydney: *See—*
Harding, John Patrick; Butler David Sydney; and Lee, Frank James, 3,798,347.

Buttery, Kenneth T.; and Haas, Richard C., to Brown Company. Top-opening carton having a unique end flap arrangement. 3,797,728, Cl. 229-36.000.

Buttner, Rolf: *See—*
Rassbach, Felix; Buttner, Rolf; and Schuck, Stephan, 3,798,301.

Buzga, Heinrich, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Method and apparatus for separting granules from a liquid. 3,797,661, Cl. 210-73.000.

Buzzi, Gunter; and Lorch, Werner, to Grohe, Hans, KG, Firma. Device for aspirating and admixing additives into a stream. 3,797,747, Cl. 239-311.000.

Buzzi, Ugo, to Albe S.A. Machine for the automatic high-speed, high precision machining of small parts, even those having a complicated form. 3,797,081, Cl. 29-38.00c.

Byers, Robert E.; and Schmitt, John, to Gulf Research & Development Company. Automated filler and lever controller for liquid nitrogen. 3,797,514, Cl. 137-212.000.

BYK-GULDEN Lamberg Chemische Fabrik GmbH: *See—*
Klemm, Kurt; and Langenscheid, Erhard, 3,798,220.

Bystrianyk, Wasyl; Federko, Andrew S.; and Trahan, Albert J., to Emhart Corporation. Mold holder arm and insert opening mechanism. 3,798,019, Cl. 65-360.000.

Bystron, Bruno, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method of and apparatus for cutting textile material. 3,797,341, Cl. 83-14.000.

Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 3,798,582.

Cake, Arthur F., to Wagner Electric Corporation. Multiplexed signal-sequence control system. 3,798,551, Cl. 325-370.000.

Caldwell, Jack N. Helmet construction. 3,797,040, Cl. 2-3.00p.

Calhan, Richard B., to Creative Inc. Meat feeding machine. 3,797,353, Cl. 83-718.000.

California Institute of Technology: *See—*
Notarys, Harris A.; and Mercereau, James E., 3,798,511.

Cameron, Colin McKenzie: *See—*
Weiss, Karl Eugene; and Cameron, Colin McKenzie, 3,798,320.

Cameron, Dugald; Hoetger, Robert A.; and Miller, Ervin R., to Chrysler Corporation. Hydrodynamic transmission. 3,797,332, Cl. 74-763.000.

Cammarata, Vincent N.; Brown, Ronald E.; and Garfinkle, David R., to United States of America, Air Force. Multiple charge incendiary bomblet. 3,797,391, Cl. 102-4.000.

Campagnuolo, Carl J.; and Lee, Henry C., to United States of America, Army. Square wedge fluidic generator for electrical and mechanical outputs. 3,798,475, Cl. 310-15.000.

Campbell, Eric C., to Wescor, Inc. Thermocouple hygrometer and method. 3,797,312, Cl. 73-336.500.

Campbell, Richard H., Jr.; and Wilkens, William B., to Wilcom Products, Inc. Capacitive probe structure for testing the integrity of electrical cables and conductors. 3,798,541, Cl. 324-72.500.

Campbell Soup Company: *See—*
Von Lersner, Wolf A.; and Singer, Harry H., 3,797,069.

Candek, Anthony J.: *See—*
Levine, Samson P.; Kugler, Ralph W.; Candek, Anthony J.; and Long, Arthur H., 3,798,093.

Candiani, Giampiero, to Societa' Italiana Telecomunicazioni, Siemens S.p.A. Channel monitor for compressed-code PCM transmission system. 3,798,635, Cl. 340-347.0dd.

Canevari, Gerard P., to Esso Research and Engineering Company. Capillary device. 3,797,250, Cl. 61-10.000.

Cannon, Robert W. Arrangement for providing access to a sealed incubator system. 3,797,172, Cl. 49-463.000.

Canon Kabushiki Kaisha: *See—*
Asou, Michiko, 3,798,354.
Hasegawa, Goro; Iura, Yukio; and Yamamichi, Masayoshi, 3,798,660.
Kano, Ichiro, 3,797,916.
Taguchi, Tetsuya, 3,798,661.
Takahashi, Toru; Ito, Yoshio; and Kodowaki, Hidejiro, 3,797,927.

Cardwell Westinghouse Company: *See—*
Daugherty, David W., Jr., 3,797,673.
Peterson, Bertil E., 3,797,097.

Carey, John R. Bolt with concealed safety cable. 3,797,868, Cl. 292-57.000.

Cargill, Robert L., to Research Corporation. Intermediate for synthesis of housefly sex attractant. 3,798,273, Cl. 260-593.00r.

Carias, Andre. Braking device for vehicles. 3,797,612, Cl. 188-79.000.

Carleton, William A., to Bendix Corporation, The. Anti-knock flow valve. 3,797,522, Cl. 137-528.000.

Carletti, Vittorio: *See—*
Bottaccio, Giorgio; Chiusoli, Paolo; Coassolo, Alfredo; and Carletti, Vittorio, 3,798,266.

Carlson, Robert E., to TRW Inc. Slipper-type pumping element for a pump or motor. 3,797,977, Cl. 418-267.000.

Carmichael, Donald C.: *See—*
Wan, Chong T.; Chambers, Douglas L.; and Carmichael, Donald C., 3,798,146.

Carp, Ralph W., to Bendix Corporation, The. Combination peak detector and level detector for use in an adaptive braking system. 3,797,894, Cl. 303-21.00r.

Carpenter Technology Corporation: *See—*
Bendel, Lee P., 3,798,075.

Carpenter, William R.; and Sponaas, Richard M., to Medallion Instruments, Inc. Trim indicator and circuit therefor. 3,797,449, Cl. 115-41.0ht.

Carpentier, Anthony Louis: *See—*
Meadows, James Edward; Horsman, Larry Ray; and Carpentier, Anthony Louis, 3,798,614.

Carrington, Peter: *See—*
Phillips, Brian Harry; and Carrington, Peter, 3,798,591.

Carrozzeria Boneschi Srl.: *See—*
Pezzaglia, Paolo, 3,797,880.

Carstens, Marion R.; and Bates, Homer J., to Georgia Tech Research Institute. Mass transportation system. 3,797,405, Cl. 104-155.000.

Carter, John L.; and McGowan, Joseph W., to United States of America, Army. Electron beam diode power device. 3,798,563, Cl. 330-44.000.

Carter-Hoffmann Corporation: *See—*
Hoffmann, Carter Clifford; and Berger, Richard R., 3,797,563.

Cason, Charles M., III: *See—*
Hagood, Jerry W.; Cason, Charles M., III; and Shelton, Joe, 3,798,570.

Cassamassima, Salvatore: *See—*
Dobry, Reuven; and Cassamassima, Salvatore, 3,797,642.

Cassand, Jean; Dubois, Jean-Claude; and Cholet, Jacques, to Institut Francais du Petroles des Carburants et Lubrifiants. Pressure wave piezoelectric sensor of continuous structure. 3,798,474, Cl. 310-9.600.

Castle Brass Works (Proprietary), Limited: *See—*
Buhler, Andreas, 3,797,515.

Caterpillar Tractor Company: *See—*
Allen, Thomas E., 3,797,519.
Downing, Benjamin A.; Johnson, Earl B.; and McClain, Richard E., 3,797,727.
Easterling, Gene B.; Page, Russell D.; Scholl, Rolland D.; and Tillman, William R., 3,797,124.
Hein, Allyn J., 3,797,245.
Kostas, James M., 3,797,599.
McWilliams, Orcenith D.; and Rice, Roger A., 3,797,140.
Moser, Raymond L.; and Oldenburg, Dorrance, 3,797,539.
Wanner, John C., 3,797,598.

Catlstedt, Paul A.: *See—*
Tall, Leonard H.; Catlstedt, Paul A.; and Erickson, Arlen J., 3,797,719.

C.A.V. Limited: *See—*
Fenne, Ivor; and Burton, Douglas Gordon, 3,797,753.

Cavatassi, Dominic. Smoke washer apparatus. 3,797,204, Cl. 55-227.000.

Cawley, Leo P. Electrophoresis cell means. 3,798,152, Cl. 204-299.000.

Cecere, Andrew P.: *See—*
Rockman, Murray L.; and Cecere, Andrew P., 3,797,080.

Celanese Corporation: *See—*
Saferstein, Lowell; and Mannion, William A., 3,798,201.

Cellerini, Albert R., to Westinghouse Electric Corporation. Circuit interrupter with induction type trip unit. 3,798,580, Cl. 335-37.000.

Cennerelli, Giuseppe. Device for fixing pieces of joinery to concrete panels. 3,797,187, Cl. 52-375.000.

Centre de Recherches Scientifiques et l'Industrie des Fabrications Metalliques, en abrege, C.R.I.F.: *See—*
DeFranco, Charles; and Eeghem, Jan Van, 3,798,027.

Cercone, Daniel. Hair dryer nozzle. 3,797,752, Cl. 239-443.000.

Cerioni, Giuseppe Renzo, to El Cu S.p.A. Butt end stitching machine. 3,797,424, Cl. 112-169.000.

Cerola, Joseph J., to Jenn-Air Corporation. Stove with selectively interchangeable cooking apparatus. 3,797,375, Cl. 99-340.000.

Cessou, Maurice; and Cosyns, Jean. Process for hydrogenating aromatic hydrocarbons to naphthenic hydrocarbons of high purity and catalyst therefor. 3,798,279, Cl. 260-667.000.

Chaffee, James L. Trailer tongue weight scale. 3,797,594, Cl. 117-136.000.

Chambers, Douglas L.: *See—*
Wan, Chong T.; Chambers, Douglas L.; and Carmichael, Donald C., 3,798,146.

Champeon, Edwin B. Cage valve with pilot and mechanical operating means. 3,797,526, Cl. 137-630.140.

Charbonneau, Albert J.; Conway, Gerard V.; and Hucko, Henry, to General Electric Company. Fuse bushing with sealing means providing hotstick changeout of fuse. 3,798,583, Cl. 337-202.000.

Charest, Bernard: *See—*
Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, 3,798,643.

Charles, Joel M.: *See—*
David, Pierre Yvon; Charles, Joel M.; and Toscano, Robert Julien, 3,797,275.

Chartmakers, Incorporated, The: *See—*
Linker, Edward A.; and Lepeer, Clarence M., 3,797,135.

Chatterji, Jiten: *See—*
Dill, Walter R.; Chatterji, Jiten; and Knox, John A., 3,797,575.

Chemical Specialties Manufacturing Corporation: *See—*
Hughes, Robert R., 3,797,065.

Chemische Werke Huls Aktiengesellschaft: *See—*
Streck, Roland; and Weber, Heinrich, 3,798,175.
Westernacher, Helmut, 3,798,180.

Cheney, Glen Trenton, to Bell Telephone Laboratories, Incorporated. Circuits including combined field effect and bipolar transistors. 3,798,466, Cl. 307-205.000.

Cherdron, Egon; Haerter, Manfred; Fassle, Fritz; Forster, Hans-Joachim; and Potencsik, Istvan, to Gebr. Giulini Gesellschaft mit beschrankter Haftung. Method of producing finely dispersed alpha calcium sulfate hemihydrate. 3,797,758, Cl. 241-29.000.

Chesky, Sheldon R., to Kendall Company, The, mesne. Nested stack of sterile shielded containers. 3,797,652, Cl. 206-229.000.

Chevron Research Company: *See—*
Arndt, John H., Jr.; and Ebert, Wayne A., 3,798,153.
Moore, Joseph E.; and Kohn, Gustave K., 3,798,274.
Reed, Marion G.; and Jaffe, Joseph, 3,798,177.

Chicoye, Etzer: *See—*

Westermann, Donald H.; Chicoye, Etzer; and Hoffmann, Darrell R., 3,798,332.

Chiku, Ken-Ichi: *See—*
Watanabe, Tadakiyo; Konishi, Hiromu; and Chiku, Ken-Ichi, 3,797,872.

Child, Bean K. Lake golf ball driving range. 3,797,827, Cl. 273-35.00k.

Childs, William V., to Phillips Petroleum Company. Method for separating liquids. 3,798,144, Cl. 204-186.000.

Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D. Refractory metal phosphate and phosphide coatings for refractory metal leads and process for producing metal phosphides. 3,798,058, Cl. 117-201.000.

Chiola, Vincent; and Ormsby, Robert W., to GTE Sylvania Incorporated. Flourescent lamp with particular phosphor coating. 3,798,479, Cl. 313-109.000.

Chiras, Stanley J.: *See—*
Boudakian, Max M.; and Chiras, Stanley J., 3,798,228.

Chisholm, James Edward; and Buonaura, Anthony, to Formica Corporation. Integrally molded header and curtain rail. 3,797,048, Cl. 4-146.000.

Chiusoli, Paolo: *See—*
Bottaccio, Giorgio; Chiusoli, Paolo; Coassolo, Alfredo; and Carletti, Vittorio, 3,798,266.

Choby, Edward G., Jr.: *See—*
Esler, Donald F.; and Choby, Edward G., Jr., 3,798,074.

Cholet, Jacques: *See—*
Cassand, Jean; Dubois, Jean-Claude; and Cholet, Jacques, 3,798,474.

Chollet, Pierre: *See—*
Gervais, Edouard; and Chollet, Pierre, 3,798,028.

Chow, Ho. Tie marker. 3,797,044, Cl. 2-146.000.

Christison, Sommerville G., to Gearmatic Co., Ltd. Two speed primary drive assembly for hydraulic winch. 3,797,325, Cl. 74-339.000.

Chrysler Corporation: *See—*
Cameron, Dugald; Hoetger, Robert A.; and Miller, Ervin R., 3,797,332.
Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., 3,798,500.
Martin, Frank J., 3,797,512.
Patterson, Norman P.; and Perkins, David J., 3,797,852.
Secola, Anthony J., 3,797,900.
Weatherhead, Herman R.; and Gibson, William P., 3,797,969.

Chrysler Corporation Method of preparing oxidation-resistant brazed regenerator cores: *See—*
Allardyce, Gordon L.; Roy, Amedee; and Belleau, Claude, 3,797,087.

Chrysler United Kingdom Limited: *See—*
Reeves, John Vincent, 3,797,857.

Chu, Chang Kwei; and Krishna, Surinder, to Westinghouse Electric Corporation. Triple diffused high voltage transistor. 3,798,079, Cl. 148-33.500.

Chukhin, Ivan Alexandrovich: *See—*
Pleshivisev, Nikolai Vasilievich; Semashko, Nikolai Nikolaevich; and Chukhin, Ivan Alexandrovich, 3,798,488.

Chvatal, Theodor L., to Owens-Illinois, Inc. Glasses with high content of silver oxide. 3,798,114, Cl. 161-191.000.

Ciba-Geigy AG: *See—*
Batzer, Hans; Habermeier, Joerger; and Porret, Daniel, 3,798,242.

Ciba-Geigy Corporation: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,798,214.
Blattner, Hans; and Schindler, Walter, 3,798,237.
Brugger, Max; Riniker, Bernhard; and Rittel, Werner, 3,798,203.
Finch, Neville; and Vlattas, Isidoros, 3,798,275.
Huebner, Charles Ferdinand, 3,798,329.
Pfleiderer, Wolfgang, 3,798,210.
Schindler, Walter; and Zuest, Armin, 3,798,325.

Cibula, Ralph J.: *See—*
Cox, Lyle G. P.; and Cibula, Ralph J., 3,797,446.

Cicile, Jean-Charles: *See—*
Jullien, Yves; and Cicile, Jean-Charles, 3,797,811.

Cincinnati Milacron Inc.: *See—*
Ma, Carlton Y. W.; and Peter, John W., 3,797,808.

Citizen Watch Company Limited: *See—*
Inoki, Kazuyoshi; Mastumura, Testuo; and Komiyama, Katsuhiko, 3,797,226.

City Tank Corporation: *See—*
Dennis, James, 3,797,680.

Clampitt, Robert L., to Systron-Donner Corporation. Electronic dither circuit for a mechanical bearing assembly and method and accelerometer using the same. 3,797,320, Cl. 73-496.000.

Clark, Charles W.; and Pereberg, William, to Airwick Industries, Inc. Container dispenser for packets of solid air treating agent. 3,797,742, Cl. 239-57.000.

Clark, Charles William. Photographic apparatus. 3,797,823, Cl. 271-64.000.

Clark, Kenneth William; and Woodward, Clifford Stanley, to United Kongdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Oil tanks and coolers. 3,797,561, Cl. 165-37.000.

Clarke, Eric Fifield Stuart, to Post Office, The. Co-axial cable with strength member. 3,798,350, Cl. 174-102.00r.

Clarke, William R.: *See—*
Shahir, Fred A.; and Clarke, William R., 3,797,263.

Classen, Franz. Method for using molten metal channel for the conveyance of liquid glass. 3,798,017, Cl. 65-99.00a.

Clayson N.V.: *See—*
Strubbe, Gilbert J., 3,797,208.

Clemens, Ogden A.: *See—*
Bonami, Ernest; and Clemens, Ogden A., 3,797,070.

Clement, Ralph C., to I-T-E Imperial Corporation. Trolley collector having replaceable grounding strap. 3,797,617, Cl. 191-49.000.

Cloosterman, Aloysius Bernardus Maria: *See—*
Van Buren, Alex Maarten; Cloosterman, Aloysius Bernardus Maria; Rek, Johannes Henricus Maria; and Zock, Hendrik Frits, 3,798,245.

Closson, Addison W., Jr. Foamed sheet for making stiffening elements. 3,797,138, Cl. 36-68.000.

Clumb, Thomas E. Explosive actuated tool for driving fastening stud. 3,797,721, Cl. 227-9.000.

Coassolo, Alfredo: *See—*
Bottaccio, Giorgio; Chiusoli, Paolo; Coassolo, Alfredo; and Carletti, Vittorio, 3,798,266.

Cobzariu, Tudor: *See—*
Dogariu, Maria; Alupei, Georgeta; Verdes, Maria; Friedman, Gaby; Grumeza, Ecaterina; Cobzariu, Tudor; and Ionescu, Ligia, 3,798,127.

Cohel Compagnie d'Horlogerie et Electronique S.A.: *See—*
Oliveri, Lucio, 3,797,223.

Cohen, Marvin: *See—*
Von Strandtmann, Maximilian; Shavel, John Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,798,219.

Cohen, Marvin P.: *See—*
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,798,240.

Cohen, Morton: *See—*
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Col-Mont Corporation: *See—*
Bunn, Clinton O., 3,798,158.

Colgate-Palmolive Company: *See—*
Borrello, Giuseppe, 3,797,982.
Dickson, Robert E.; and Barkin, Stanley M., 3,798,169.
Shaw, John Arthur, 3,797,648.
Vazquez, Salvador Morelos, 3,798,181.

Collins Radio Company: *See—*
Melvin, William J., 3,798,371.

Collins, Ronald J. Stethoscope receptacle. 3,797,717, Cl. 224-5.00h.

Colorado Refractories Corporation: *See—*
Mueller, Ferd A., 3,797,801.

Colton, Russell F.: *See—*
Joy, Robert D.; and Colton, Russell F., 3,797,309.

Colugno, Dolores. Method of forming a ruffle or the like. 3,797,714, Cl. 223-46.000.

Columbia Broadcasting System, Inc.: *See—*
Bauer, Benjamin B., 3,798,373.

Combs, Cassius C.; and Hulet, Arthur D. Assembly tool. 3,797,094, Cl. 29-237.000.

Combustion Unlimited, Incorporated: *See—*
Straitz, John F., III, 3,797,991.
Straitz, John F., III, 3,797,992.

Comer, William Timmey: *See—*
Kreighbaum, William Eugene; and Comer, William Timmey, 3,798,225.

Cominco Ltd.: *See—*
Milner, Edward Francis Godfrey; Peters, Ernest; Swinkels, Godefridus Maria; and Vizsolyi, Andrew Imre, 3,798,026.

Commercial Solvents Corporation: *See—*
Runge, Wallace F.; and Edwards, Donald W., 3,798,092.

Commissariat a l'Energie Atomique: *See—*
Brafman, Marek; Godeau, Alain; Laverlochere, Jean; and Lecomte, Jean-Luc, 3,798,455.
Skok, Jean, 3,798,125.

Commonwealth Scientific and Industrial Research Organization: *See—*
Feldtman, Henry Douglas; and Fleischfresser, Barry Edwin, 3,797,997.

Compagnie Francaise des Petroles: *See—*
Azalbert, Jean Paul; and Giraud, Adrien, 3,797,576.

Compagnie Generale d'Electricite: *See—*
DeWavrechin, Regis, 3,798,567.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Melchior, Gerard, 3,798,363.

Comprehensive Health Testing Laboratories, Inc.: *See—*
Graham, Martin H., 3,797,479.

Condes Corporation: *See—*
Gamroth, Donald R., 3,798,109.

Conibear, Frank Ralph. Releasable mount means for animal trap. 3,797,162, Cl. 43-90.000.

Conlee, George D. Coil spring worm shaft. 3,797,326, Cl. 74-425.000.

Conley, Fred Miller, to Dudley & Conley Scale Co., Inc. Heavy duty industrial scale. 3,797,593, Cl. 177-134.000.

Conners, John P., to Giddings & Lewis, Inc. Automatic deceleration to zero velocity in iteratively computing numerical control systems. 3,798,427, Cl. 235-151.110.

Conroy, Lino: *See—*
Manzanilla, Fernando; Manjarrez, Armando; Conroy, Lino; and Lara, Julio, 3,798,157.

Conserv Resources Inc.: *See—*
Dykes, Dewey B., 3,797,704.

Constant, James Nickolas. Vector velocity system. 3,798,644, Cl. 343-8.000.

Continental Can Company, Inc.: *See—*

Adomaitis, Domas, 3,797,689.
Garver, Edward B., 3,797,985.
Merz, Edmund H., 3,797,983.
Roth, Donald J., 3,797,294.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Voss, Hartwig, 3,797,816.

Controls Company of America: *See—*
Gebel, Irving; and Kahale, Abed G., 3,798,400.

Conway, Gerard V.: *See—*
Charbonneau, Albert J.; Conway, Gerard V.; and Hucko, Henry, 3,798,583.

Cook, Charles A., to Ethyl Corporation. Energy absorbing apparatus. 3,797,873, Cl. 293-63.000.

Cooper, Herbert G., to General Signal Corporation. Electro hydraulic steering system. 3,798,525, Cl. 318-588.000.

Cooprider, Rex C., to Diamond International Corporation. Locking means for shipper type liquid dispensers. 3,797,705, Cl. 222-153.000.

Cornelius Company, The, mesne: *See—*
Swick, George L., Jr.; Danielson, Ellsworth H.; and Taylor, Theodore W., 3,797,842.

Corning Glass Works: *See—*
Brouneus, Harold A., 3,798,416.
Schulkind, Herbert; and Pettersen, Aage, 3,798,431.
Westwig, Ralph A., 3,797,910.

Coronelli, Carolina; Gallo, Giangualberto; and Beretta, Graziella, to Gruppo Lepetit S.p.A. Pyrroline based compounds. 3,798,130, Cl. 195-80.00r.

Corporandy, Joseph. Anti-incendiary device for automotive vehicles. 3,798,399, Cl. 200-61.45r.

Cosentino, Louis Salvatore, to RCA Corporation. Page composer translating information from electrical to optical. 3,798,620, Cl. 340-173.0lt.

Cossman, Peter J.: *See—*
Mule, Leonard C., 3,797,706.

Costa, Allan. Method of securing a closure member to a plastic container. 3,798,094, Cl. 156-69.000.

Costello, Charles Albert, to General Electric Company. Method of making a salient pole rotor construction with removable pole tips. 3,797,106, Cl. 29-598.000.

Costigan, Edward F.: *See—*
Walsh, Michael Adrian; and Costigan, Edward F., 3,797,478.

Cosyns, Jean: *See—*
Cessou, Maurice; and Cosyns, Jean, 3,798,279.

Couch, James L. Back fill attachment for a draft vehicle. 3,797,582, Cl. 172-45.000.

Courtaulds Limited: *See—*
Evans, Lee Stanley, 3,798,142.

Cowan, Philip L., to Elechogasdynamics, Inc. Method for electrostatically depositing a fluid. 3,797,739, Cl. 239-3.000.

Cowles, Walter C., to Esso Research and Engineering Company. Water ballast arrangement for externally insulated tankers. 3,797,437, Cl. 114-74.00a.

Cox, Lyle G. P.; and Cibula, Ralph J. Mobile power unit. 3,797,446, Cl. 115-6.100.

Coyne, James Christopher; McCoy, Robert Gordon; and Smith, Arnold Ray, to Bell Telephone Laboratories, Incorporated. Mole with decoupled nose and body. 3,797,586, Cl. 173-133.000.

Cramer, Howard A., to Lowrance Electronics, Inc. Trolling motor with steering means. 3,797,448, Cl. 115-18.00e.

Crane, Carl J. Aircraft landing altimeter. 3,797,308, Cl. 73-178.00t.

Creative Inc.: *See—*
Calhan, Richard B., 3,797,353.

Credoz, Paul; Descremoux, Jacques; and Gaffet, Jacques, to Fives Lille Cail. Heat exchanger. 3,797,566, Cl. 165-114.000.

Crenshaw, William N., Jr., to KCL Corporation. Folding device. 3,797,821, Cl. 270-79.000.

Creston Manufacturing Co., Inc.: *See—*
Behrens, Norman A., 3,797,807.

Crevar, Steve, Jr.: *See—*
Boisen, Martin H.; Crevar, Steve, Jr.; and Morris, Robert T., 3,797,635.

Crim, Paul E.; and Warfield, Wayne, to Stryker Corporation. Drill like driving device. 3,797,497, Cl. 128-310.000.

Crissman, Roy G.: *See—*
Franz, Helmut; and Crissman, Roy G., 3,798,050.

Critchlow, Dale L.; and Schuster, Stanley E., to International Business Machines Corporation. Fet device with guard ring and fabrication method therefor. 3,798,512, Cl. 317-235.00r.

Croix-Marie, Francis Marie Jean: *See—*
Bertin, Jean Henri; and Croix-Marie, Francis Marie Jean, 3,797,399.

Crone, Ruth B. Paper roll support for typewriters. 3,797,631, Cl. 197-133.00r.

Crontnes Machine Works, Inc.: *See—*
Fencl, Vernon R.; and Roze, Albert, 3,797,296.

Crosthwait, Lavurn. Fishing line motion sensing alarm. 3,798,630, Cl. 340-279.000.

Crowe, Talmadge L., to Baker Oil Tools, Inc. Full opening safety valve. 3,797,573, Cl. 166-224.00s.

C.R.T. Italia S.r.l.a.: *See—*
Di Muriaglio, Cesare Marchetti San Martino, 3,798,414.

Cryton Optics, Inc.: *See—*
Barbour, Roberto, 3,797,917.

Cummin, Alfred Samuel; Daun, Henryk; Gilbert, Seymour George; and Henig, Yair, to Borden, Inc. Packaging bananas in carbon dioxide permeable film. 3,798,333, Cl. 426-106.000.

Cunha, Joseph J., to Cunha Products, Inc. Lightweight converter dolly. 3,797,863, Cl. 280-476.00r.

Cunha Products, Inc.: *See—*
Cunha, Joseph J., 3,797,863.

Curtin, Christopher John, to Tektronix Inc. Non-storage electron multiplier operation of transmission storage tube. 3,798,494, Cl. 315-11.000.

Cuscurida, Michael; and Rice, Doris Marvin, to Jefferson Chemical Company, Inc. Polyurethanes stabilized by incorporating the reaction product of acetone and diphenylamine. 3,798,184, Cl. 260-2.5bb.

Cushman Industries, Incorporated: *See—*
Roddy, John J.; and Swanson, Linwood B., 3,797,837.

Cutler, Royal A.; and Schalit, Samuel. Amidinoureas and amidinothioureas. 3,798,269, Cl. 260-553.00r.

Cwycyshyn, Walter: *See—*
Kitchen, Elwyn L., Jr.; and Cwycyshyn, Walter, 3,797,656.

D.A.B. Industries, Inc.: *See—*
Mitchell, David C.; and Latreille, Charles W., 3,798,403.

Daimler-Benz AG: *See—*
Letzel, Karl; Stober, Helmut; and Nickel, Elmar, 3,797,605.

Daimler-Benz Aktiengesellschaft: *See—*
Barenyi, Bela; and Renner, Hermann, 3,797,601.
Bermanseder, Robert; and Bermanseder, Norbert, 3,797,881.
Burckhardt, Manfred H.; and Krohn, Hellmut, 3,797,893.
Muller, Dieter; and Jurisch, Wilhelm, 3,797,232.
Steiner, Adolf; and Rinnergschwentner, Hans, 3,797,883.
Worner, Gunter; and Schrape, Peter, 3,797,622.

Daiwa Can Company Limited: *See—*
Yoshimura, Takayuki, 3,797,431.

Dall'Asta, Gino; and Meneghini, Pietro, to Montecalini Edison S.p.A. Halogenated polyhydrocarbons having a regular structure, and process for obtaining same. 3,798,291, Cl. 260-931.000.

Damon, Neil F.; and Yeo, Herbert G., to Augat, Inc. Rack assembly for electrical terminal panels. 3,798,507, Cl. 317-101.0dh.

Danfoss A/S: *See—*
Kjeldsteen, Per, 3,797,331.
Nielsen, Helmer Trost, 3,797,805.

Dang, Tuan Phat: *See—*
Kagan, Henri; and Dang, Tuan Phat, 3,798,241.

Dangalila, Frans V. A., to Flume Stablizations systems, Inc. Open hull stabilizer. 3,797,440, Cl. 114-125.000.

Danielson, Ellsworth H.: *See—*
Swick, George L., Jr.; Danielson, Ellsworth H.; and Taylor, Theodore W., 3,797,842.

Dantani Sangyo Kabushiki Kaisha: *See—*
Ogawa, Yasumasa; and Nimiyama, Seigo, 3,798,098.

Darden, Levin D.; and Morrison, Richard E. Electrical grounding and insulation resistance tester. 3,798,540, Cl. 324-51.000.

Darin, John K.: *See—*
Bemis, Alan G.; Darin, John K.; and Hoff, Melvern C., 3,798,282.

Darrel, Bernard: *See—*
Weichbrodt, Bjorn; and Darrel, Bernard, 3,798,626.

Daton Progress Corporatiion: *See—*
Smith, Robert E., 3,797,352.

Daugherty, David W., Jr., to Cardwell Westinghouse Company. Cushioning arrangement for railroad cars. 3,797,673, Cl. 213-8.000.

Daun, Henryk: *See—*
Cummin, Alfred Samuel; Daun, Henryk; Gilbert, Seymour George; and Henig, Yair, 3,798,333.

David, Pierre Yvon; Charles, Joel M.; and Toscano, Robert Julien, to Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement. Controlled-motor pivoting coupling devices. 3,797,275, Cl. 64-17.0r.

Davidson, Cecil W. Boiler burner balancing counter control system. 3,797,988, Cl. 431-12.000.

Davis, Boyce W.: *See—*
Davis, Floyd O.; and Davis, Boyce W., 3,797,959.

Davis, D. Carter; Sawant, Ulhas S.; and Scaffidi, Francis, to Rexnord Inc. Crusher adjusting system. 3,797,759, Cl. 241-30.000.

Davis, D. Carter; Sawant, Ulhas S.; and Scaffidi, Francis, to Rexnord Inc. Adjusting crusher under load. 3,797,760, Cl. 241-30.000.

Davis, Floyd O.; and Davis, Boyce W. Shaft centering machine. 3,797,959, Cl. 408-135.000.

Davis, Gary A. Dog stanchion for automobiles. 3,797,462, Cl. 119-96.000.

Davis, Herbert W. Variable width front mounted mower. 3,797,209, Cl. 56-13.600.

Davis, Jonathan B.: *See—*
Buckingham, Robert L.; Davis, Jonathan B.; and Herd, Harold H., 3,798,458.

Davis, Owen R., to Allis-Chalmers Corporation. Insulated mounting for platform and cab. 3,797,604, Cl. 180-89.00r.

Day, Donald Earl; and Easterl, Donald Oscar, to Eastman Kodak Company. Film feeding mechanism for motion picture projectors. 3,797,924, Cl. 352-194.000.

Day, John J.; and Hirschman, Paul S., to Ocean Portein Corporation. Apparatus for growing crustaceans. 3,797,458, Cl. 119-2.000.

De Baan, Johannes Jasper: *See—*
Willich, Jean Herbert; and De Baan, Johannes Jasper, 3,797,818.

De Beer, Johan, to Bateman, Edward L., Limited. Method for loading particulate material onto open railway trucks. 3,797,682, Cl. 214-152.000.

De Jarlais, Gordon M., to Lear Siegler, Inc. Condensate disposal system. 3,797,269, Cl. 62-280.000.

De Jonge, Martinus Catrinus. Grid ceiling. 3,797,192, Cl. 52-665.000.

De La Taillade, Jean; and Degraves, Jacques. Alarm system for divers. 3,798,629, Cl. 340-279.000.

De Santo, du Long and Welsh: *See—*
De Santo, Maurice, 3,797,049.

De Santo, Maurice, to De Santo, du Long and Welsh. Modular portable skating rink. 3,797,049, Cl. 4-172.190.

De Vos, Frank: *See—*
Lotter, William; and De Vos, Frank, 3,797,377.

Deacon, Gordon D.; and Toto, John A., to Sperry Rand Corporation. Gripper-bar bumper pads. 3,797,929, Cl. 355-3.000.

Dean, Harold L.; and Penna, Vincent Della, Jr., to Dennison Manufacturing Company. Marking system with rotary print drums. 3,797,386, Cl. 101-69.000.

Deardurff, Lawrence R., to Owens-Corning Fiberglas Corporation. Electrical lead. 3,798,589, Cl. 339-223.00s.

Deaton, Charles U. Illuminator grid. 3,798,446, Cl. 240-146.000.

DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, to RCA Corporation. Microwave transmission line and devices using multiple coplanar conductors. 3,798,575, Cl. 333-10.000.

Decker, Herbert; and Jung, Friedrich, to Triumph Werke Nuernberg A.G. High speed printer. 3,797,387, Cl. 101-93.00c.

Decraene, Denis F., to Diamond Shamrock Corporation. Finely divided RUO_2/plastic matrix electrode. 3,798,063, Cl. 117-230.000.

Deere & Company: *See—*
Erdman, Leon Paul; and Wanie, Lee Joseph, 3,797,214.
Funk, Francis Claire, 3,798,594.
Magruder, Michael Keith; and Woods, Terrill Wayne, 3,797,798.
Nennen, John Joseph, 3,797,766.
Resetich, John Martin, 3,797,216.
Roth, Robert Richard, 3,797,580.
Sawyer, Bobby Gene; and Fickle, J. Clark, 3,797,207.

Deering Milliken Research Corporation: *See—*
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Defosse, Georges: *See—*
Binard, Pierre; Defosse, Georges; and Jawuerie, Jean Marie, 3,798,489.

DeFranco, Charles; and Eeghem, Jan Van, to Centre de Recherches Scientifiques et l'Industrie des Fabrications Metalliques, en abrege, C.R.I.F. Gray iron. 3,798,027, Cl. 75-124.000.

Degraves, Jacques: *See—*
De La Taillade, Jean; and Degraves, Jacques, 3,798,629.

DeHart, John R.: *See—*
Orrick, W. W.; Sottle, William; and DeHart, John R., 3,797,350.

Deisenroth, Robert J., to Excel Industries, Inc. Closure counterbalance. 3,797,817, Cl. 267-71.000.

Delalande S.A.: *See—*
Fauran, Claude P.; Douzon, Colette; Huguet, Gerard J.; Raynaud, Guy M.; and Bailly, Yves A., 3,798,218.

Delfosse, Pierre, to Omya S.A. Pigment for coating paper and manufacture thereof. 3,798,047, Cl. 106-306.000.

Delisle, Gaston A. Silent alarm system and means for directing airborne personnel to emergency site. 3,798,375, Cl. 179-2.00r.

Delmas, Robert: *See—*
Foex, Marc; Delmas, Robert; and Bonet, Claude, 3,798,408.

Demmert, Lawrence E. Seine-hauling block. 3,797,806, Cl. 254-192.000.

DeMoute, Jean Pierre: *See—*
Hainaut, Daniel; Toromanoff, Edmond; and DeMoute, Jean Pierre, 3,798,236.

Dempsey, Robert H. Energy measuring device for pulse type defibrillators. 3,798,542, Cl. 324-133.000.

Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; and Kuroyanagi, Masasi, 3,798,433.

Dennis, James, to City Tank Corporation. Mechanism for transferring and compacting refuse in a refuse collection apparatus. 3,797,680, Cl. 214-83.300.

Dennison Manufacturing Company: *See—*
Bone, Arnold Roberts, 3,797,722.
Dean, Harold L.; and Penna, Vincent Della, Jr., 3,797,386.

Dennison Manufacturing Company, mesne: *See—*
Foret, Pierre G.; and Donohoe, John William, 3,798,422.

Dentant, Willy G. A.; and Persoons, Gustaaf M., to International Machinery Corporation. Cluster breaker. 3,797,503, Cl. 130-30.00r.

D'Entrement, Joseph: *See—*
Lo Cicero, Vincent R.; and D'Entrement, Joseph, 3,797,062.

Depetris, Lorenzo, to Smyth Europea S.p.A. Automatic machine for feeding and sewing signatures in books. 3,797,419, Cl. 112-21.000.

Dervan, James T., III: *See—*
Bliss, Burit E.; Dervan, James T., III; Griffith, Leroy E.; Pung, Bruce D.; Thorpe, Robert A.; and Vogel, Norman A., 3,798,610.

Descremoux, Jacques: *See—*
Credoz, Paul; Descremoux, Jacques; and Gaffet, Jacques, 3,797,566.

Desmond, Richard J.; Fronczek, Edward J.; and McCarthy, John J., to General Electric Company. Machine and process for semiconductor device assembly. 3,797,103, Cl. 29-583.000.

Dessauer, Ralph G.: *See—*
Bochman, Raymond A.; Dessauer, Ralph G.; and Jen, Dian P., 3,798,007.

Detrex Chemical Industries, Inc.: *See—*
Petering, Wilbur H.; Kircher, Charles E., Jr.; and Pinchak, Paul R., 3,798,170.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Rocktaschel, Gottfried; Thurn, Friedrich; Fleischhauer, Horst; Schwarze, Werner; and Westlinning, Hermann, 3,798,196.

DeWavrechin, Regis, to Compagnie Generale d'Electricite. Laser generator. 3,798,567, Cl. 331-94.500.

Dexter, Halton B. Stranded motorists' sign. 3,797,151, Cl. 40-129.00c.

Di Giacomo, Sebastian F., to Gull Airborne Instruments, Inc. Fuel immersible capacitor for measurement of liquid fuel in a tank. 3,798,515, Cl. 317-246.000.

Di Muriaglio, Cesare Marchetti San Martino, to C.R.T. Italia S.r.l.a. Heating arrangement for dry copying machines. 3,798,414, Cl. 219-216.000.

Diamand, Roger David: *See—*
Reynolds, Patricia May; and Diamand, Roger David, 3,798,450.

Diamond International Corporation: *See—*
Cooprider, Rex C., 3,797,705.

Diamond Shamrock Corporation: *See—*
Decraene, Denis F., 3,798,063.

Dibrell, James W., to Nospil Limited. Non-spill container closure. 3,797,696, Cl. 220-90.400.

Dickert, Joseph J., Jr.; and Rowe, Carleton N., to Mobil Oil Corporation. Lubricating compositions containing metal phosphonates. 3,798,162, Cl. 252-32.500.

Dickinson, Harry C. Adjustable soft packing seal. 3,797,564, Cl. 165-82.000.

Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Method of recording a modulated carrier for radiation reproduction. 3,798,386, Cl. 179-100.40m.

Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Record carrier for storing angularly modulated signals. 3,798,388, Cl. 179-100.400.

Dickson, Robert E.; and Barkin, Stanley M., to Colgate-Palmolive Company. Composition for application of soil-release finish. 3,798,169, Cl. 252-89.000.

Didier-Werke AG: *See—*
Kutzer, Hans-Joachim; Weinreich, Wolfgang; Harmsen, Lothar; and Fricke, Gerd D., 3,797,712.

Dierckx, Jozef Aime: *See—*
Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Pollet, Robert Joseph; Sneyers, Hendrik Hubert; and Dierckx, Jozef Aime, 3,798,031.

Diesel Kiki Kabushiki Kaisha: *See—*
Kobayashi, Masayoshi; Ohtani, Yoshio; and Abe, Mitsunobu, 3,797,469.

Dietch, Leonard, to Zenith Radio Corporation. Instant play television receiver with constant voltage transformer. 3,798,369, Cl. 178-7.50r.

Dietsche, Wolfram: *See—*
Beutel, Peter; Koenig, Karl-Heinz; Dietsche, Wolfram; and Adolphi, Heinrich, 3,798,230.

Dill, Hans G. Rotating ring display. 3,798,640, Cl. 340-378.00r.

Dill, Walter R.; Chatterji, Jiten; and Knox, John A., to Halliburton Company. Additives for temporarily plugging portions of subterranean formations and methods of using the same. 3,797,575, Cl. 166-282.000.

Dillon, Janus J., to Food Equipment, Inc. Fowl agitating and wetting system. 3,797,068, Cl. 17-11.000.

Dimitriadis, Andre C., to Intertech, Inc. Electronic locking system. 3,797,936, Cl. 356-71.000.

Dinse, Wilhelm. Shield-gas welding gun. 3,798,410, Cl. 219-130.000.

Dipaola, Vincent J.; and Allen, Ralph H., to United States of America, Army. Apparatus for destruction of documents with free gaseous oxygen in a safe or container. 3,797,412, Cl. 109-29.000.

Director-General of Agency of Industrial Science and Technology: *See—*
Abe, Toshihiko, 3,797,319.

Display Technology Corporation: *See—*
Aiken, William Ross, 3,797,914.

DiTullio, Flavia, to Munsingwear, Inc. Panty girdle. 3,797,501, Cl. 128-528.000.

Dixon, Thomas E.: *See—*
Meder, Siegfried R.; and Dixon, Thomas E., 3,797,569.

Dobry, Reuven; and Cassamassima, Salvatore, to Beech-Nut, Inc. Infusion package. 3,797,642, Cl. 206-.500.

Dobson, Christopher David. Motor drives for vacuum deposition apparatus. 3,797,452, Cl. 118-49.000.

Dobson, Patrick Francis; and Wyman, David Alfred, to Plessey Handel und Investments A.G. Measurement of pressure ratio. 3,798,432, Cl. 235-151.340.

Doeller, Charles H., III: *See—*
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, 3,798,650.

Dogariu, Maria; Alupei, Georgeta; Verdes, Maria; Friedman, Gaby; Grumeza, Ecaterina; Cobzariu, Tudor; and Ionescu, Ligia, to Fabrica de Antibiotice Iasi. Medium for the culture of the escherichia colt strain. 3,798,127, Cl. 195-65.000.

Doherty, Orval Austin: *See—*
Ali, Syed Aejaz; and Doherty, Orval Austin, 3,797,413.

Doktorov, Leonid Borisovich: *See—*

Salukvadze, Viktor Samsonovich; Koshman, Igor Filippovich; and Doktorov, Leonid Borisovich, 3,797,060.
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Donnelly, James H., to Epoxon Corporation. Inorganic cement compositions containing epoxy resin and pozzolan. 3,798,191, Cl. 260-13.000.
Donohoe, John William: *See—*
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Donohue, James P.: *See—*
Gilberg, Robert C.; Donohue, James P.; and Patel, Ramesh S., 3,798,421.
Doran, Barbara Jean. Hygienic cleaning device for the anal area of the human body. 3,797,481, Cl. 128-65.000.
Dornier System GmbH: *See—*
Huf, Franz, 3,797,974.
Dorren, Louis, to Matsushita Electric Corporation of America, mesne. Four channel FM decoder utilizing a one-of-four decoder. 3,798,377, Cl. 179-15.0bt.
D'Ottavio, Eugene D.: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,798,096.
Douglass, Walter; and Morgatroyd, Paul John. Calculators. 3,797,133, Cl. 35-31.00r.
Douzon, Colette: *See—*
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Soderquist, Frederick J.; and Martz, Lyle E., 3,798,178.
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Watson, Richard E., 3,798,195.
Downey, Rogers B., to Polaroid Corporation. Compact motion picture film handling cassette and camera. 3,797,778, Cl. 242-199.000.
Downing, Benjamin A.; Johnson, Earl B.; and McClain, Richard E., to Caterpillar Tractor Company. Collapsible container and assembly method therefor. 3,797,727, Cl. 229-23.00a.
Dowty Hydraulic Units Limited: *See—*
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Gavin, John H., 3,797,091.
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Duboisson, Sidney E.; and Verret, Allen J. Shim take-up ring for pile connection. 3,797,258, Cl. 61-53.500.
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Duffy, Albert W.; and Ippolito, Frank. Linkage for foot operated bass drum pedal. 3,797,356, Cl. 84-422.000.
Dumbauld, Richard, to Berkele[illegible] Company, Inc. Semi-automatic bail structure for open face reel. 3,797,774, Cl. 242-84.20g.
Dumitru, Earl T.: *See—*
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Dye, Cloyde G.: *See—*
Paridon, Leo J.; Dye, Cloyde G.; and Yarsa, Frank J., 3,798,018.
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Dykes, Dewey B., to Conserv Resources Inc. Safety closure. 3,797,704, Cl. 222-41.000.
Dynamit Noble AG: *See—*
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McColgin, William C.; and Webster, Frank G., 3,798,566.
Ebeling, Joachim, to Suddeutsche Kalkstickstoff-Werke AG. Polyvinylidene fluoride coating for metals. 3,798,052, Cl. 117-75.000.
Eberhardt, Edward H., to International Telephone and Telegraph Corporation. Log photodiode. 3,798,451, Cl. 250-211.00r.
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Ecodyne Corporation, mesne: *See—*
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Edson, William A., to Stanford Research Institute. Short pulse generator. 3,798,461, Cl. 307-106.000.
Edstrom, Gene H.; Lutter, Edward P.; and Robinson, Francis L., to International Business Machines Corporation. Controlling peripheral subsystems. 3,798,613, Cl. 340-172.500.
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Edwards, John D. Cab or van vehicle air deflector. 3,797,879, Cl. 296-1.00s.
Edwards, John W., to Hammond Corporation. Balancing means for a rotating speaker system. 3,797,606, Cl. 181-27.00a.
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Efimov, Leonid Alexandrovich: *See—*
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Eheim, Franz, to Bosch, Robert, G.m.b.H. Fuel injection apparatus for automotive vehicles using gas turbine power plants. 3,797,235, Cl. 60-39.28r.
Ehrenberg, Hermann, to Fouquet-Werk Frauz & Planck. Connecting arrangement. 3,797,950, Cl. 403-370.000.
Eichenlaub, John E. Fuel fired space heater. 3,797,474, Cl. 126-85.00r.
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Eigenbrod, Lester K., to Union Carbide Corporation. Cryogenic fluid supply system. 3,797,262, Cl. 62-50.000.
Einarson, Norman S., to Solder Removal Company. Dual in line package handling tool. 3,797,092, Cl. 29-203.00h.
Eisenmann, Josef; and Helgemeir, Heinrich. Tool for ballast tamping machine. 3,797,397, Cl. 104-12.000.
Eklund, Kurt I.: *See—*
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Eko Denshi Kabushiki Kaisha: *See—*
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Ekstein, Chaim Henry, to Remington Aluminum Window Corporation. Frame construction. 3,797,194, Cl. 52-758.00h.
Ekstrand, Roy A. Automatic tint control circuit. 3,798,352, Cl. 178-5.4he.
El Cu S.p.A.: *See—*
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Elechogasdynamics, Inc.: *See—*
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Elfarr, Johnnie A., 50% interest to George, William, Jr. Apparatus for flowing liquid from a well. 3,797,968, Cl. 417-138.000.
Elliott Brothers (London) Limited: *See—*
Heller, Fritz Peter; and Smith, Brian Frederick, 3,798,666.

Elliott, Phillip Mitchell. Selective positioning means for curtain assembly. 3,797,553, Cl. 160-267.000.

Ellis, Benjamin Clement, Jr.; Scholly, Christian; McGonigal, Charles; and Snyder, John Howard, said Ellis assor. to Bell Telephone Laboratories, Incorporated and said McGonigal, said Scholly and said Snyder assor. to Western Electric Company, Incorporated.Devices for making electrical connections. 3,798,587, Cl. 339-97.00p.

Elographics, Incorporated: *See—*
Hurst, George S., 3,798,370.

Eloranta, Vaito K.; and Walworth, Vivian K., to Polaroid Corporation. Apparatus for adapting a reflex camera to use with a binocular microscope. 3,798,665, Cl. 354-79.000.

Elphiac: *See—*
Binard, Pierre; Defosse, Georges; and Jawuerie, Jean Marie, 3,798,489.

Elshuber, Karl, to Texas Instruments, Incorporated. Analog voltage switch. 3,798,468, Cl. 307-242.000.

Emerson Electric Co.: *See—*
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Emerson Labeltape Corporation: *See—*
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Nelson, John; and Schultz, Robert J., 3,797,641.

Endo, Takamasa; and Sugimura, Shojiro. Sealing apparatus for gas compressor. 3,797,963, Cl. 415-175.000.

Endter, Dale S.; Miller, Edwin E.; and Westacott, Harry L., to Eastman Kodak Company. Vibration isolation arrangement for aperture card photographic copying machine. 3,797,932, Cl. 355-18.000.

Engineered Products: *See—*
Wood, Howard J.; and Greiner, James A., 3,797,762.

Engle, Stewart E.: *See—*
Faessler, Adelmar; and Engle, Stewart E., 3,797,537.

Engle, William J.: *See—*
Augenblick, Harry A.; and Engle, William J., 3,798,642.

English, Christopher John, to Noranda Mines, Limited. Method for continuous casting of metal strips. 3,797,555, Cl. 164-89.000.

English, James William, to Atmos Corporation. Power control device with heat transfer means. 3,798,506, Cl. 317-100.000.

Enloe, Kenneth M.; and Gresham, James T., to Kimberly-Clark Corporation. Disposable tissue with controlled wet break-up. 3,798,120, Cl. 162-112.000.

Enoguchi, Yuji: *See—*
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Enomoto, Shigeru: *See—*
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Enright, Thomas F.: *See—*
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Ensley, E. Keith; and Scholz, Henry A. Differential microcalorimeter. 3,798,003, Cl. 23-253.00r.

Entreprise de Recherches et d'Activites Petrolieres elf: *See—*
Brafman, Marek; Godeau, Alain; Laverlochere, Jean; and Lecomte, Jean-Luc, 3,798,455.

Environmental Systems Corporation: *See—*
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Envirotech Corporation: *See—*
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Epoch Company, Ltd.: *See—*
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Epoxon Corporation: *See—*
Donnelly, James H., 3,798,191.

Epstein, Marvin A., to International Telephone and Telegraph Corporation. Frame synchronization system. 3,798,378, Cl. 179-15.0bs.

Erdman, Leon Paul; and Wanie, Lee Joseph, to Deere & Company. Mower discharge chute deflector and bagging attachment. 3,797,214, Cl. 56-320.200.

Erichsen, Roger H.: *See—*
Kirkpatrick, Max B.; Harvey, Andrew G.; and Erichsen, Roger H., 3,797,228.

Erickson, Arlen J.: *See—*
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Erickson, John M.; and Reich, Bernard, to United States of America, Army. Temperature compensated zener diode for transient suppression. 3,798,510, Cl. 317-234.00r.

Ericson, Richard E., to Bard, C. R., Inc. Cystoscopy sheet. 3,797,484, Cl. 128-132.00d.

Esashi, Hanjiro; and Kawamata, Katsuyoshi, to Sony Corporation. Tape cassette. 3,797,779, Cl. 242-199.000.

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Esler, Donald F.; and Choby, Edward G., Jr., to Allegheny Ludlum Industries, Inc. Surface finishing. 3,798,074, Cl. 148-6.160.

Espey, Kermit Maynard; and Gavin, John Joseph, to Miles Laboratories, Inc. Therapeutic and diagnostic allergenic extract and process for preparing same. 3,798,319, Cl. 424-91.000.

Esso Research and Engineering Company: *See—*
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Ethicon, Inc.: *See—*
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Ethyl Corporation: *See—*
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Etters, James N., to River, Dan, Inc. Dyeing textile materials with vat and sulfur dyes and reducing agent stabilizers for same. 3,798,172, Cl. 252-188.000.

Eujiyama, Sadaaki: *See—*
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Evan, George E., to Eastman Kodak Company. Variable duration braking circuit for a momentary intermittently driven web transporting mechanism. 3,798,518, Cl. 318-6.000.

Evans, Jack R. Foldable cot. 3,797,051, Cl. 5-82.000.

Evans, Lee Stanley, to Courtaulds Limited. Corrosion protection. 3,798,142, Cl. 204-147.000.

Evans, Robert G. Method of reconditioning used steel drums. 3,798,066, Cl. 134-27.000.

Excel Industries, Inc.: *See—*
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Explosives and Chemical Products Limited: *See—*
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Fabrica de Antibiotice Iasi: *See—*
Dogariu, Maria; Alupei, Georgeta; Verdes, Maria; Friedman, Gaby; Grumeza, Ecaterina; Cobzariu, Tudor; and Ionescu, Ligia, 3,798,127.

Fabriques Movado Rue du Parc la Chux de Fonds Canton Neuchatel: *See—*
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Faffart, Andre Georges; and Vinot, Claude Paul, to La Telemecanique Electrique. Pneumatic timer. 3,797,616, Cl. 188-298.000.

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Fagre, Raymond C.; and Kaiser, Elvin E., said Kaiser assor. to said Fagre, Raymond C. Drop bottom container. 3,797,878, Cl. 294-71.000.

Fairfield, Hugh J., to Du Pont of Canada Limited. Conversion method for textile filaments. 3,797,073, Cl. 19-83.000.

Faraci, Giorgio; and Godi, Giuseppe, to Bemberg S.p.A. Method for the texturization of yarns, and the product thereof. 3,797,220, Cl. 57-140.00r.

Farah Manufacturing Company: *See—*
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Farmer, Richard L. Garage door opener. 3,797,171, Cl. 49-360.000.

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Fauran, Claude P.; Douzon, Colette; Huguet, Gerard J.; Raynaud, Guy M.; and Bailly, Yves A., to Delalande S.A. 2-Isopropyl tetrahydro-1,3-substituted oxazines. 3,798,218, Cl. 260-246.00r.

Favre, Robert, to Fabriques Movado Rue du Parc la Chux de Fonds Canton Neuchatel. Compensation of the thermal frequency drift of a mechanical oscillator for timekeeping. 3,797,224, Cl. 58-23.0tf.

Fawn Engineering Co.: *See—*
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Fawn Engineering Corporation: *See—*
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Fayren, Jose Maria, to Hijos de J. Barreras S.A. Method for the construction of floating units of great dimensions. 3,797,438, Cl. 114-77.00r.

Federal Paper board Company, Inc., mesne: *See—*
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Federal Tool & Plastics; a division of VCA Corporation: *See—*
Porcelli, John C.; and Ostrowsky, Efrem M., 3,797,688.

Federal-Mogul Corporation: *See—*
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Federko, Andrew S.: *See—*
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Fedor, Robert J.; and Smith, Walter E., to Gould, Inc. Method of making a fine dispersion aluminum base bearing. 3,797,084, Cl. 29-149.5pm.
Feistel, Horst, to International Business Machines Corporation. Block cipher cryptographic system. 3,798,359, Cl. 178-22.000.
Feistel, Horst, to International Business Machines Corporation. Step code ciphering system. 3,798,360, Cl. 178-22.000.
Feistel, Horst, to International Business Machines Corporation. Centralized verification system. 3,798,605, Cl. 340-172.500.
Feldman, Inez, to Orthopedic Equipment Company, Inc. Pelvic traction belt. 3,797,483, Cl. 128-75.000.
Feldtman, Henry Douglas; and Fleischfresser, Barry Edwin, to Commonwealth Scientific and Industrial Research Organization. Method for fixing the shape of textile materials. 3,797,997, Cl. 8-127.600.
Felten & Guilleaume Kabelwerke Aktiengesellschaft: *See—*
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Fence, Vernon R., to Grotnes Machine Works, Inc. Clamp and reinforcing ring for pipe wrapping. 3,797,531, Cl. 138-147.000.
Fencl, Vernon R.; and Roze, Albert, to Crontnes Machine Works, Inc. Method and apparatus for forming convoluted metal annulus. 3,797,296, Cl. 72-367.000.
Fenne, Ivor; and Burton, Douglas Gordon, to C.A.V. Limited. Liquid fuel injection systems. 3,797,753, Cl. 239-533.000.
Fernandes, Joseph F., to United Aircraft Products, Inc. Refrigerated gas dryer. 3,797,565, Cl. 165-111.000.
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Ferrentino, Antonio: *See—*
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Field, Owen L. Adjustable plural conveyor. 3,797,634, Cl. 198-43.000.
Fielder Electronics, Limited: *See—*
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Finch, Neville; and Vlattas, Isidoros, to Ciba-Geigy Corporation. Etherified mercapto-methoxyamines. 3,798,275, Cl. 260-609.00r.
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Fisher, Charles: *See—*
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Fisher, David. Fuel system of internal combustion engines. 3,797,468, Cl. 123-133.000.
Fishmaster Products, Inc.: *See—*
Murdock, Forrest Lee, Sr., 3,797,203.
Fitton, Robert C., to Huber, J. M., Corporation. Modified, precipitated alumino silicate pigments and an improved method for preparing same. 3,798,046, Cl. 106-306.000.
Fitzhugh, Davis. Controlled water distribution system and methods. 3,797,738, Cl. 239-1.000.
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Fleck, Fritz; Kittl, Hans; and Schmid, Horst, to Sandoz Ltd. Bis-aroxazolyl-para-polyphenylenes. 3,798,231, Cl. 260-307.00d.
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Fleury, Richard L.; and Etes, Donald E., said Etes, assor. to Fleury, Richard L. Disposable bags. 3,797,734, Cl. 229-62.500.
Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., to Chrysler Corporation. Time delay headlamp control system. 3,798,500, Cl. 315-82.000.
Floris, Telemaco: *See—*
Tesei, Renato; Girotti, Pierleone; and Floris, Telemaco, 3,798,284.
Fluck, Rene, to SIG Schweizerische Industrie-Gesellschaft Industrieplatz. Apparatus for producing a package for groups of flat objects. 3,797,197, Cl. 53-156.000.
Flume Stablizations systems, Inc.: *See—*
Dangalila, Frans V. A., 3,797,440.
Flury, Karl; and Zitt, Rolf, to Schleumiger, Kurt. Soldering appliance. 3,797,724, Cl. 228-37.000.
Flystrom, Ernst: *See—*
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Foex, Marc; Delmas, Robert; and Bonet, Claude, to Agence Nationale de Valorisation de la Recherche (Anvar). Methods and devices for plasma production. 3,798,408, Cl. 219-121.00p.
Food Equipment, Inc.: *See—*
Dillon, Janus J., 3,797,068.
Foote, Alvin L.: *See—*
Mawhinney, Robert C.; McCone, Alan L., Jr.; and Foote, Alvin L., 3,797,359.
Foote, Daniel J., to Master Lock Company. Sheathed clamps for looped cable ends. 3,797,947, Cl. 403-23.000.
Foote, Robert S., to Geodata International, Inc. Radiation measuring system utilizing a charge sensitive amplifier. 3,797,802, Cl. 250-71.50r.
Ford Industries, Inc.: *See—*
Hoven, El Don L., 3,798,382.
Ford Motor Company: *See—*
McLean, Arthur F., 3,797,231.
Foret, Pierre G.; and Donohoe, John William, to Dennison Manufacturing Company, mesne. Ticket reader. 3,798,422, Cl. 235-61.11r.
Formica Corporation: *See—*
Chisholm, James Edward; and Buonaura, Anthony, 3,797,048.
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Forster, Siegfried; and Schneider, Karl-Uwe, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. System for controlling the gas pressure in a closed gas recirculation installation. 3,797,516, Cl. 137-340.000.
Forsyth, Daniel H.; and Melvin, James M., Jr., to Lockheed Aircraft Corporation. Protective device. 3,797,645, Cl. 206-46.00h.
Foster Wheeler Corporation: *See—*
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Fotland, Richard A.; and Straughan, Virgil E., to Horizons Incorporated; a division of Horizons Research, Incorporated. Imaging system employing ions. 3,797,926, Cl. 355-3.000.
Fougere, Guy L.; and Rothery, John L., to Little, Arthur D., Inc. Device and method for testing coins employing velocity determining means. 3,797,628, Cl. 194-99.000.
Fouquet-Werk Frauz & Planck: *See—*
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Fournier, Paul Richard, to Bell Telephone Laboratories, Incorporated. Technique for reducing interdiffusion rates and inhibiting metallic compound formation between titanium and platinum. 3,798,145, Cl. 204-192.000.
Foxboro Company, The: *See—*
Bristol, Edgar H., II, 3,798,426.
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Fraley, Thomas E. Portable precision golf ball sphericity gauge. 3,797,123, Cl. 33-178.00b.
Frambs, Terrence K.; and Marton, Alejando B., to Honeywell Information Systems, Inc. System and method for effecting cyclic redundancy checking. 3,798,597, Cl. 340-146.1al.
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Frank, Kurt F.; Kays, David D.; and Kruse, John W., Jr., to Aerojet-General Corporation. Multiple effect evaporators. 3,797,552, Cl. 159-17.00c.
Franklin Mint Corporation: *See—*
Ringle, Louis A., 3,797,649.
Franz, Helmut; and Crissman, Roy G., to PPG Industries, Inc. Catalytic sensitization of substrates for metallization. 3,798,050, Cl. 117-47.00a.
Frech, Anton. Resiliently supported aerial cableway car. 3,797,409, Cl. 105-148.000.
Freier, Saul: *See—*
Silva, Joseph, 3,797,687.
Freitas, Manuel P.; and Laeser, Bernard P., to Foxboro Company, The. Industrial control system utilizing high speed digital computer. 3,798,424, Cl. 235-150.100.
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Frick Company: *See—*
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Friend, Auron D.; Nelson, Gary L.; and Yoder, Royce A., to LeTaurneau, R. G., Inc. Reversing control system for electrically powered vehicles. 3,798,520, Cl. 318-55.000.
Frisbee, Lloyd E. Emergency signal flag. 3,797,450, Cl. 116-28.00r.
Frishman, Daniel. Method of packaging of pile fabrics. 3,797,647, Cl. 206-51.000.
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Fruhauf, Waldemar, to Krone GmbH. PCM coder with compression characteristic. 3,798,637, Cl. 340-347.0ad.
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Fujiwara, Takao: *See—*
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Fukuzaki, Hiroaki, to Tenchi Kikai Kabushiki Kaisha. Automatic twist wrapping apparatus. 3,797,198, Cl. 53-209.000.
Fukuzawa, Soichi; and Oshima, Ryoichiro, to Hitachi, Ltd. Table ware washer. 3,797,509, Cl. 134-178.000.
Fulton, James C.: *See—*
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Funk, Francis Claire, to Deere & Company. Vehicle attitude warning device. 3,798,594, Cl. 340-52.00h.
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Furuhashi, Takahiro: *See—*
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Furukawa, Hikaru: *See—*
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Gage, Franklin A.; and Muttick, Richard P., to Gould Inc. Hearing aid with valved dual ports. 3,798,390, Cl. 179-107.0fd.
Gager, Lawrence J., Jr. Visor and face shield helmet attachment. 3,797,042, Cl. 2-10.000.
Galantay, Eugene E.; and Habeck, Dietmar A., to Sandoz-Wander, Inc. Propadienyl-substituted carbinols. 3,798,215, Cl. 260-239.55c.
Gallagher, Bernard J., Jr. Recording system for judicial proceedings. 3,798,387, Cl. 179-100.2md.
Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., to Atlantic Design & Development Corporation. Integrated push button panel for controlling aircraft instrumentalities. 3,798,611, Cl. 340-172.500.
Galle, Edward L., to Pillsbury Company, The. Method for applying thermoplastic coatings to food and pharmaceutical products. 3,798,338, Cl. 426-307.000.
Gallina, Oreste, to Bemberg S.p.A. Method for spinning filaments which have been regenerated from a solution of cuprammonium cellulose and filaments produced thereby. 3,798,297, Cl. 264-181.000.
Gallo, Giangualberto: *See—*
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Gamco Holding Corporation: *See—*
Rockman, Murray L.; and Cecere, Andrew P., 3,797,080.
Gamroth, Donald R., to Condes Corporation. Apparatus for applying cut lables to objects. 3,798,109, Cl. 156-568.000.
Gandolfi, Giovanni: *See—*
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Gaponov, Vasily Alexandrovich: *See—*
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Garavelli, Giancarlo, to Isernia Aktiengesellschaft. Machine for making ice cream. 3,797,268, Cl. 62-258.000.
Garfinkle, David R.: *See—*
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Gargasz, Louis J. Portable working platform. 3,797,607, Cl. 182-82.000.
Garland, Milton E., to Frick Company. Pressurized refrigerant feed with recirculation. 3,797,265, Cl. 62-174.000.
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Garver, Edward B., to Continental Can Company, Inc. Excess parison remover. 3,797,985, Cl. 425-305.00b.
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Gaudion, Walter R., to Ambrit, Inc. Numerically controlled work transport for forming press. 3,797,720, Cl. 226-33.000.
Gaunt, Thomas Norman. Laminating incompatible polystyrene and vinyl chloride or acrylic plastic. 3,798,103, Cl. 156-244.000.
Gavin, John H., to Du Pont de Nemours, E. I., and Company. Terminal applicator. 3,797,091, Cl. 29-203.00b.
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Gebel, Irving; and Kahale, Abed G., to Controls Company of America. Fully grounded pressure switch. 3,798,400, Cl. 200-83.00r.
Gebelius, Sven Runo Vilhelm. Supporting and insulating device for a piping system. 3,797,529, Cl. 138-111.000.
Gebr. Giulini Gesellschaft mit beschrankter Haftung: *See—*
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Geese, Albert; Hoher, Herbert; and Akowicz, Erwin A., to Siemens Aktiengesellschaft. Time delay switch having contact rain actuator and energy storage means. 3,798,397, Cl. 200-34.000.
General Dynamics Corporation: *See—*
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General Electric Company: *See—*
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Ali, Syed Anjaz; and Doherty, Orval Austin, 3,797,413.
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Charbonneau, Albert J.; Conway, Gerard V.; and Hucko, Henry, 3,798,583.
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General Signal Corporation: *See—*
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Genta, Guido Roger. Naphthyloxyalkoxyanthraquinone dyes. 3,798,239, Cl. 260-380.000.

Geodata International, Inc.: *See—*
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George, William, Jr.: *See—*
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Georgia Tech Research Institute: *See—*
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Georgia-Pacific Corporation: *See—*
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Gerod, John T. Steam control method and apparatus for fabric pressing machine. 3,797,142, Cl. 38-15.000.

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Smolka, Thomas Gordon; and Schweizer, Gottfried, 3,797,844.

Gervais, Edouard; and Chollet, Pierre, to Noranda Mines Limited. Zinc-aluminum alloys with good machinability. 3,798,028, Cl. 75-178.0am.

Gewerkschaft Eisenhutte Westfalia: *See—*
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Giblon, Robert P., to Sharp, George C., Inc. Jack-up type offshore platform apparatus. 3,797,256, Cl. 61-46.500.

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Gilberg, Robert C.; Donohue, James P.; and Patel, Ramesh S., to National Cash Register Company, The. Double field code reading system. 3,798,421, Cl. 235-61.11e.

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Gilbert, Seymour George: *See—*
Cummin, Alfred Samuel; Daun, Henryk; Gilbert, Seymour George; and Henig, Yair, 3,798,333.

Gilchrist, Allan E., to SCM Corporation. Apparatus for the treatment of liquors using porous deposition electrodes. 3,798,150, Cl. 204-272.000.

Gilhaus, Heinz; and Villiers, Maxence. Planing instrument for calloused skin. 3,797,505, Cl. 132-76.400.

Gillemot, George W.: *See—*
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Thompson, John T.; and Gillemot, George W., 3,798,585.

Gillette Company, The: *See—*
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Gimenez, Fernando Sanz. Compass ballpoint pen. 3,797,117, Cl. 33-27.00b.

Ginns, Haskell, to Indikon Company, Inc., The. Self calibrating strain gage torquemeter. 3,797,305, Cl. 73-136.00a.

Giraud, Adrien: *See—*
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Girotti, Pierleone: *See—*
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Glass, Marvin I.; McKay, Robert; and Breslow, Jeffrey, to Glass, Marvin, & Associates. Toy vehicle launching station. 3,797,164, Cl. 46-232.000.

Glass, Marvin I.; and Morrison, Howard J., to Marvin Glass & Associates. Random dispensation game. 3,797,831, Cl. 273-138.00r.

Glasson, Jean E. Machine for compacting and tying coils. 3,797,381, Cl. 100-12.000.

Glaverbel S.A.: *See—*
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Goff, Otis Ward. Motor-driven press and actuating means therefor. 3,797,385, Cl. 100-232.000.

Golay, Bernard, SD: *See—*
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Goldammer, Georg, to Schubert & Salzer Maschinenfabrik. Fiber-mixing device. 3,797,072, Cl. 19-81.000.

Goldschmied, Sandor F. Audio responsive light display. 3,798,638, Cl. 340-366.00b.

Golius, Tamara Efimovna: *See—*
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Gomboc, Franz. Fire escape window. 3,797,167, Cl. 49-141.000.

Goode, James K., Jr.: *See—*
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Goodfellow, Robert D., to Kennametal, Inc. Stabilizing roller. 3,797,592, Cl. 175-325.000.

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Goodrich, B. F., Company, The: *See—*
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Goodsite, James R., to Westvaco Corporation. Shipping container for bathtubs. 3,797,653, Cl. 206-320.000.

Goodyear Tire & Rubber Company, The: *See—*
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Gordon, Bernard M.; and Neumann, Leopold, to Gordon Engineering Company. Series-shunt switching pair, particularly for synchro to digital conversion, DC or AC analog reference multiplying or plural synchro multiplexing. 3,798,636, Cl. 340-347.0ad.

Gordon Engineering Company: *See—*
Gordon, Bernard M.; and Neumann, Leopold, 3,798,636.

Gordon, Merrill K., to Peabody Gordon-Piatt, Inc. Burner control system. 3,797,989, Cl. 431-90.000.

Gorham, Michael L.: *See—*
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Gorike, Rudolf, to Akg Akiestische u Kino-Gerate Gesellschaft m.b.H. Headphone construction. 3,798,393, Cl. 179-182.00r.

Gorlov, Semen Maximovich: *See—*
Tseitlin, Aron Yakovlevich; Tikhonov, Sergei Sergeevich; Martynov, Oleg Viktorovich; Makarov, Mikhail Nikolaevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Gorlov, Semen Maximovich; Bashkov, Vladimir Alexeevich; and Sitnov, AnatolyGeorgievich, 3,797,557.

Gorum, Larry Austin, to Du Pont de Nemours, E. I., and Company. Non-caking aerosol anti-perspirant composition. 3,798,317, Cl. 424-47.000.

Goto, Jisaku: *See—*
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Goto, Kenji; Nohira, Hidetaka; and Mizuno, Kiyohiko, to Toyota Jidoshiya Kogyo Kabushiki Kaisha. Control valve assembly for a gas passageway. 3,797,803, Cl. 251-61.500.

Gottwald, Winfried, to Siemens Aktiengesellschaft. Circuit for interference free recognition of zero crossings of read signals of magnetic layer memories. 3,798,467, Cl. 307-235.000.

Gould, Henry: *See—*
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Gould Inc.: *See—*
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Graham, Elwood M., to Graham, M. H., Corporation. Electrically heated cooking utensil. 3,798,415, Cl. 219-441.000.

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Gregg, Joseph, Jr., to Jab Company, Inc. Multiple condition sensing and audio warning system. 3,798,672, Cl. 360-12.000.

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Gregorovich, Charles J.; and Adams, Robert W., to Minster Machine Company, The. 192/146.000. 3,797,623, Cl. 10-13-72.

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Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, to Dynamit Noble AG. Safety device for vehicles. 3,797,853, Cl. 280-150.0ab.

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Guertin, Alfred Thomas; Keeling, Ronald James; and Schiermeier, Walter William, to Formica Corporation. Laminate comprising pigmented malamine resin modified nitrile rubber impregnated base and superimposed film. 3,798,117, Cl. 161-251.000.

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Gummelt, Klaus, to Varta Aktiengesellschaft. Battery carrying arrangement. 3,797,876, Cl. 294-63.00b.

Gundlach, Robert W., to Xerox Corporation. Photoelectrosolographic imaging method utilizing powder particles. 3,798,030, Cl. 96-1.0ps.

Gunnewig, Hubert, to Westfalia Separator AG. Method and apparatus for controlling the concentration factor of a discharge. 3,797,736, Cl. 233-20.00r.

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Guth, Jean-Louis; Pereyron, Albert; and Wey, Raymond, to Azote et Produits Chimiques S.A. Direct synthesis of faujasite zeolites containing sodium and lithium. 3,798,311, Cl. 423-329.000.

Guth, Lauren W., to General Electric Company. Self-latching wast food disposer mounting assembly. 3,797,764, Cl. 241-100.500.

Guth, Lauren W., to General Electric Company. Control arrangement for a washing machine. 3,798,465, Cl. 307-141.000.

Gutierrez, Julian. Foldable table and seating structure. 3,797,884, Cl. 297-159.000.

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Hagan, Edward A. Rotary shell chamber. 3,797,153, Cl. 42-27.000.

Hagen, William F., to Turbo Refrigerating Company. Ice rake control. 3,797,267, Cl. 62-233.000.

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Hagood, Jerry W.; Cason, Charles M., III; and Shelton, Joe, to United States of America, Army. Laser system incorporating a field effect emitter. 3,798,570, Cl. 331-94.500.

Hahn, Philip P., to Georgia-Pacific Corporation. Planting device for tree seedling plugs. 3,797,417, Cl. 111-4.000.

Hainaut, Daniel; Toromanoff, Edmond; and DeMoute, Jean Pierre, to Roussel Uclaf. Insecticidal trienic compounds and process. 3,798,236, Cl. 260-327.0th.

Hall, John N., to Hercules Incorporated. Process for spreading a graphite fiber tow into a ribbon of graphite filaments. 3,798,095, Cl. 156-73.000.

Haller, Hans; and Wendl, Erwin. Concrete reinforcement and method of an apparatus for making same. 3,797,193, Cl. 52-669.000.

Haller, Herbert; and Mennekes, Werner, to Gewerkschaft Eisenhutte Westfalia. Cutter drive motor support on arm pivot. 3,797,888, Cl. 299-76.000.

Haller, Richard. Friction clutches. 3,797,620, Cl. 192-56.00r.

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Hallmann, Hermann. Magnetically-operated locking and control device. 3,797,288, Cl. 70-276.000.

Halpern, Walter J. Remote indicating adjustable angle instrument. 3,797,315, Cl. 73-363.900.

Haltmeier, Paul, to Fischer, Georg, AG. Filling thread clamping device for a shuttleless weaving machine. 3,797,532, Cl. 139-194.000.

Hama, Tetsuro; and Nishimura, Izuhiko, to Kabushiki Kaisha Suwa Siekosha. Driving arrangement of passive time indication devices. 3,797,225, Cl. 58-50.00r.

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Hamar, James H. Pump support adapter. 3,797,571, Cl. 166-88.000.

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Hamner, Robert L.; Napier, John M.; Stooksbury, Earl W.; and Strehlow, Richard A., to United States of America, Atomic Energy Commission. Preparing composition for graphite bodies. 3,798,161, Cl. 252-1.000.

Han, Yuri W., to Lockheed Aircraft Corporation. Carboxylic acid dihydrazide polymers. 3,798,199, Cl. 260-49.000.

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Handle, Walter; Handle, Rainer; and Latt, Paul, to Rieter-Werke Konstanz, Dipl.-Ing. Walter Handle K.G., Firma. Apparatus for processing materials. 3,797,763, Cl. 241-82.100.

Hanes, James W. E.; and Larralde, Edward, to Vetco Offshore Industries, Inc. Telescopic hydraulic decelerator. 3,797,366, Cl. 91-404.000.

Hannah, Clifford George; Shuttleworth, Reginald; and McCroft, Alan David, to Rolls-Royce, Limited. Method of joining a part to a matrix material. 3,798,105, Cl. 156-307.000.

Hanson, Thomas F. Rotary wing apparatus. 3,797,964, Cl. 416-134.000.

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Harding, John Patrick; Butler David Sydney; and Lee, Frank James, to Post Office, The. Improvements in or relating to a crimping clip for electrically connecting together electrical conductors. 3,798,347, Cl. 174-84.00c.

Hardy, Leon: *See—*
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Harman, Edward W.; and Leatherman, Marvin R., to Prestige Furniture Corporation. Seat type article of furniture and method of manufacturing same. 3,797,885, Cl. 297-445.000.

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Harris, Jesse W., to Tampo Manufacturing Company. Ground compacting apparatus. 3,797,954, Cl. 404-117.000.

Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, to Sharps Associates. 5,5-Dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl) -1,2,3,4-tetrahydro-5H-(1) benzopyrano (3,4-D)-pyridine as an anti-hypertensive agent. 3,798,326, Cl. 424-263.00.

Hartl, John J. Pneumatic vehicle sanding apparatus. 3,797,867, Cl. 291-3.000.

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Hasebe, Takefumi; Takizawa, Arata; and Sato, Setsuo, to Yokogawa Electric Works, Ltd. Chart drive mechanism for recorders. 3,798,659, Cl. 346-136.000.

Hasegawa, Goro; Iura, Yukio; and Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Automatic focusing device for camera. 3,798,660, Cl. 354-25.000.

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Hattman, Henry H., III. Electromechanical apparatus for cutting coils of polyester foam strip or the like. 3,797,344, Cl. 83-171.000.

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Hattri, Saburo; and Imaki, Naoshi, to Mitsuhishi Chemical Industries, Ltd. Process for producing acyloxydodecatrienes. 3,798,260, Cl. 260-497.00a.

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Hausmann, George F.; and Blackman, Arthur W., to United Aircraft Corporation. Supersonic combustion engine. 3,797,239, Cl. 60-268.000.

Hausser, Karl. Electron double resonance spectrometer with a microwave cavity bridge arrangement. 3,798,532, Cl. 324-.50r.

Hawes, Edward M. Soil tester. 3,797,301, Cl. 73-84.000.

Hawley, Robert Lyle, to Ralston Purina Company. Method for centering solid bodies within a coagulable liquid. 3,798,336, Cl. 426-279.000.

Hay, William J., Jr., to PPG Industries, Inc. Combined stain retardent and separator interleaving material for glass sheets. 3,798,112, Cl. 161-162.000.

Hayashi, Hiroyuki, to Sony Corporation. Video signal reproducing system. 3,798,364, Cl. 178-6.6dc.

Hayashi, Yutaka; and Tarui, Yasuo, to Kogyo Gijutsuin. High frequency insulated data field effect transistor with protective diodes. 3,798,514, Cl. 317-235.00r.

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Healy, Robert M.; and Hovey, Ralph J., to Bunker-Ramo Corporation, The. Method for fabricating selectively plated electrical contacts. 3,797,108, Cl. 29-630.00c.

Heard, James L.; Opittek, Eugene W.; and Rands, Larry G., to Hughes Aircraft Company. Target motion compensator. 3,798,425, Cl. 235-150.270.

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Heflinger, Lee O.; and Wuerker, Ralph F., to TRW Inc. Optical apparatus for measuring deformation of parabolic antennas. 3,797,938, Cl. 356-109.000.

Hein, Allyn J., to Caterpillar Tractor Company. Dual range pressure dependent variable flow fluid delivery system. 3,797,245, Cl. 60-452.000.

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Heller, Aaron. Upright game board having rotatably mounting indicia bearing balls. 3,797,829, Cl. 273-130.00b.
Heller, Fritz Peter; and Smith, Brian Frederick, to Elliott Brothers (London) Limited. Recording systems. 3,798,666, Cl. 354-79.000.
Hellyer, James A., to Procter & Gamble Company, The. Granular free-flowing detergent bath composition. 3,798,179, Cl. 252-535.000.
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Henning, Wolfgang; von Hoerschelmann, Konstantin; Kruger, Ingo; and Weidlich, Herbert, to Siemens Aktiengesellschaft. Method of producing a semiconductor component. 3,798,080, Cl. 148-187.000.
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Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industries Co., Ltd. Device for measuring an activity of zinc ions. 3,798,147, Cl. 204-195.00m.
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Hills, Austin Ariss. Key-receiving lock assemblies and apparatus incorporating such assemblies. 3,798,398, Cl. 200-44.000.
Hinckey, Sandrajeanne Bushell. Display apparatus. 3,797,150, Cl. 40-124.400.
Hino, Naganori: *See—*
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Hobo, Nobuhito; and Omori, Norio, to Nippondenso Co., Ltd. Fuel injection system for internal combustion engines. 3,797,465, Cl. 123-32.0ea.
Hock, Fritz, to Gutos Metallschliessen-fabrik Bader & Hoch K.G. Waistband for trousers and slide fastener therefor. 3,797,046, Cl. 2-237.000.
Hoddow, Thomas; and Gates, Eric, to Lucas, Joseph, (Industries) Limited. Sprayers for liquids. 3,797,751, Cl. 239-426.000.
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Hoffman, Douglas L. Gem faceting apparatus. 3,797,177, Cl. 51-120.000.
Hoffmann, Carter Clifford; and Berger, Richard R., to Carter-Hoffmann Corporation. Portable food service equipment. 3,797,563, Cl. 165-48.000.
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Hofstein, Steven R., to Princeton Electronic Products, Inc. Data storage and display system. 3,798,633, Cl. 340-324.00a.
Hoglund, Nils, to Tri-Ordinate Corporation. Apparatus for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of positions. 3,797,957, Cl. 408-44.000.
Hogstrom, Edwin F., to Nordson Corporation. Apparatus for coating the interiors of hollow bodies. 3,797,456, Cl. 118-316.000.
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Hollis, James T., to United States of America, Air Force. Deceleration responsive flow valve. 3,797,781, Cl. 244-1.0sc.
Holloway, Robert L. Gardener's helpers cutting hoe. 3,797,581, Cl. 172-372.000.
Holm, James P.; VanGerpen, Rolland P.; and Paradis, Maurice E., to Kirkhill Inc. Adjustable height ballcock assembly. 3,797,518, Cl. 137-434.000.
Holmes, George S., to Federal Paper board Company, Inc., mesne. Bottle carrier. 3,797,729, Cl. 229-40.000.
Honer, Arthur M. Device for locking movable objects to the ground. 3,797,283, Cl. 70-58.000.
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Hooke, Noel Harry; Steel, Thomas; and Bird, Jack Raymond, to Rolls-Royce (1971) Limited. Annular combustion chamber with ceramic annular ring. 3,797,236, Cl. 60-39.310.

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Horner, Robert L. Spice game. 3,797,826, Cl. 273-1.00r.

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Hoshi, Yoshimitu; Wakabayashi, Takeshi; and Uchida, Saburo, to Tamura Electric Works, Ltd. Telephone apparatus. 3,798,380, Cl. 179-18.00b.

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Hosoda, Masayuki; and Kassai, Kimitaka, to Otari Electric Company Ltd. Automatic cassette tape winding apparatus. 3,797,770, Cl. 242-56.00r.

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Hosono, Hiroo; Minamide, Seiko; and Fukushima, Juichi, to Matsuchita Electric Industrial Co., Ltd. Tape reel and tape reel storing magazine. 3,797,777, Cl. 242-197.000.

Hotta, Seiji; and Akamatsu, Takashi, to Sumitomo Chemical Company, Limited. Naphthalimide hydrazinamides. 3,798,224, Cl. 260-281.000.

Houng, Shunjen. Antenna control. 3,798,649, Cl. 343-117.00r.

House, Albert M. Wind-forced wheel turner. 3,797,786, Cl. 244-103.00s.

Houston, Robert K.: *See—*
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Howe, Wilson S. Quick connect nut. 3,797,336, Cl. 81-125.000.

Howeth, David Franklin. Hydraulic throttle actuator. 3,797,967, Cl. 417-34.000.

Hoya Glass Works, Ltd.: *See—*
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Huber, Constance C. Clamping means for phyiological fluid infustion systems. 3,797,792, Cl. 248-229.000.

Huber, J. M., Corporation: *See—*
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Huebner, Thomas W., to Johnson Service Company. Digital signal transmission apparatus. 3,798,608, Cl. 340-172.500.

Huemmer, Thomas F., to O'Brien Corporation, The. Control of atmospheric composition during radiation curing. 3,798,053, Cl. 117-93.310.

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Huey, John A. Quick-freezer. 3,797,272, Cl. 62-381.000.

Huf, Franz, to Dornier System GmbH. Packing strip arrangement for rotary piston engines. 3,797,974, Cl. 418-129.000.

Huffman, Clifton J., to American Metal Climax, Inc. Treatment of aluminum waste liquors. 3,798,160, Cl. 210-53.000.

Huffman, Tommie R., to Motorola, Inc. Method of making semiconductor devices. 3,797,102, Cl. 29-577.000.

Hughes Aircraft Company: *See—*
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Hughes, Ivor Wallace; and Green, Sydney James, to Brown and Williamson Tobacco Corporation. Smoking articles. 3,797,504, Cl. 131-153.000.

Hughes, Robert R., to Chemical Specialties Manufacturing Corporation. Integrated foam extracting and rotary scrubbing machine. 3,797,065, Cl. 15-353.000.

Hughes, Thomas Bartley, to Ronson Corporation. Portable cordless hairdryer. 3,797,475, Cl. 126-206.000.

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Hulsbosch, Cornelis Jozef; and Nederlof, Dirk, to U.S. Philips Corporation. Remote control system. 3,798,601, Cl. 340-148.000.

Humlong, Robert Frank, to Wald Manufacturing Company, Incorporated. Cycle pedal with reflector and method of manufacturing same. 3,797,912, Cl. 350-99.000.

Hunt, Charles d'A., to Airco, Inc. Vapor deposition process. 3,798,055, Cl. 117-107.000.

Hunt, Robert P.; and Winkler, Richard H. Infrared imaging system. 3,798,366, Cl. 178-6.800.

Hunter, Carl P.; and Kay, Charles W., to Deering Milliken Research Corporation. Loom doff truck. 3,797,679, Cl. 214-75.00h.

Hunter, Joe S.: *See—*
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Hurschman, Alfred A.; and Udell, Leslie R., said Hurschman, Alfred, assor. to Ampoules, Inc. Ampoule applicator with one-way clutch. 3,797,488, Cl. 128-218.00f.

Hurschman, Alfred A.; and Schiller, Thomas P., to Ampoules, Inc. Hypodermic ampoule with skin tensioning clip. 3,797,490, Cl. 128-218.00m.

Hurschman, Alfred A., to Ampoules, Inc. Method of preforming an intramuscular injection. 3,797,491, Cl. 128-218.0da.

Hurst, George S., to Elographics, Incorporated. Electrographic sensor for determining planar coordinates. 3,798,370, Cl. 178-18.000.

Hurt, Harmon C., to General Motors Corporation. Spring and spring installation. 3,797,611, Cl. 188-71.800.

Huska, Paul. Union for connecting electrical conductors. 3,798,586, Cl. 339-89.00r.

Huste, Arno, to General Foods Corporation. Process for producing high quality spray dried coffee. 3,798,342, Cl. 426-471.000.

Huster, Lienhard Bodo: *See—*
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Hygrometrics, Inc.: *See—*
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Hynes, John F., Jr. Credit authorization system. 3,798,602, Cl. 340-149.00a.

Hynes, Joseph H.; and Ortolon, Arthur P., Jr., to Vetco Offshore Industries, Inc. Combined metal and elastomer seal. 3,797,864, Cl. 285-140.000.

I-T-E Imperial Corporation: *See—*
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Iba, Yoshio; and Tomizu, Yutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering system lock for diesel powered motor vehicles. 3,797,287, Cl. 70-239.000.

Ibing, Werner, to A/S Rolles Fabriker. Shopping bag of plastic foil. 3,797,733, Cl. 229-55.000.

Ichiko Industries Limited: *See—*
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ICN Pharmaceuticals, Inc.: *See—*
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Ikeda, Morio; and Tsumoto, Mamoru, to Teijin Limited. False twist-crimped polyester yarns and process for their production. 3,797,221, Cl. 57-140.00r.

Ikeguchi, Shigehiko; and Yamashita, Norio, to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd. Switch control system. 3,798,463, Cl. 307-125.000.

Ikejima, Yoritaka: *See—*
Yamada, Norio; Iguchi, Yoji; Tanaka, Yoshimasa; Oho, Tatsuke; and Ikejima, Yoritaka, 3,797,109.

Illetschko, Gerhard, to Fernseh GmbH. Correcting vertical resolution in television color images. 3,798,353, Cl. 178-5.400.

Illumination Industries, Inc.: *See—*
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Imagawa, Tameichi; and Kitsuda, Kaname. Methods of producing accurate bore surfaces. 3,797,556, Cl. 164-95.000.

Imaida, Takayuki: *See—*
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Immenroth, Otto; and Eschbach, Robert C., to Oxelson Fishing Tackle Mfg. Co. Roller tip for fishing rods. 3,797,158, Cl. 43-24.000.

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Industrie Pirelli Societa per Azioni: *See—*
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Inoki, Kazuyoshi; Mastumura, Testuo; and Komiyama, Katsuhiko, to Citizen Watch Company Limited. Timepiece fitted with a regulator controllable from outside. 3,797,226, Cl. 58-67.000.

Inoue, Masayoshi: *See—*
Tanaka, Susumu; Inoue, Masayoshi; Enoguchi, Yuji; Wada, Kenichi; and Fujiwara, Takao, 3,797,930.

Inoue, Tokuta; and Yamaguchi, Shunzo, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippon des Kabushiki. Exhaust emission control device. 3,797,240, Cl. 60-303.000.

Inoue, Touru; Ohsato, Nobuyoshi; and Hasegawa, Jun, to Nippon Sheet Glass Co., Ltd. Double ion exchange method for strengthening glass articles. 3,798,013, Cl. 65-30.000.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
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Institut Francais du Petroles des Carburants et Lubrifiants: *See—*
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Instituto Mexicano Del Petroleo: *See—*
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International Business Machines Corporation: *See—*
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Ishii, Masao; Sunamori, Takashi; and Kimura, Sadao, to Mitsubishi Rayon Co., Ltd. Process for producing monomer mixture. 3,798,171, Cl. 252-182.000.

Ishikawa, Paul J.; and Glass, Marvin I., to Glass, Marvin, & Associates. Launchers and target having overloud mechanism. 3,797,828, Cl. 273-126.00r.

Isogai, Tokio: *See—*
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Itagaki, Sadayoshi: *See—*
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Ivanovich, Anatoly. Volumetric metering apparatus. 3,797,709, Cl. 222-194.000.

Ive, Goodwin Alfred George. Protective systems and apparatus therefor. 3,798,627, Cl. 340-276.000.

Ive, Goodwin Alfred George. Protective systems and apparatus therefor. 3,798,628, Cl. 340-276.000.

Ivessa, Stefan, to Waagner-Biro Aktiengesellschaft. Waste gas flow system for metal-treating apparatus. 3,797,812, Cl. 266-16.000.

Iwai, Ken: *See—*
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Iwanciow, Bernard L.; and Lawrence, William J., to United Aircraft Corporation. Solid hypergolic propellant systems. 3,797,238, Cl. 60-219.000.

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Izawa, Minoru, to Kabushiki Kaisha Seikosha. Electronic time-keeping apparatus. 3,798,428, Cl. 235-168.000.

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Izumitani, Tetsuro; and Masuda, Isao, to Hoya Glass Works, Ltd. Optical glass having anomalous dispersion porperties. 3,798,041, Cl. 106-47.00q.

J-TEC Associates, Incorporated: *See—*
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Jab Company, Inc.: *See—*
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Jackson, Julius, to Du Pont de Nemours, E. I., and Company. Silica encapsulated lead chromate pigment of the primrose yellow shade. 3,798,045, Cl. 106-298.000.

Jackson, Kenneth R. Apparatus for cleaning engines. 3,797,507, Cl. 134-102.000.

Jackson, Norman G. Mansard roof structure. 3,797,179, Cl. 52-90.000.

Jacobs, Alexander J. Portable pool cleaner. 3,797,508, Cl. 134-167.00r.

Jacobs, Heinz, to Kleinewefers Industrie-Companie GmbH. Metallic recuperator and method of operating same. 3,797,558, Cl. 165-1.000.

Jacobs Manufacturing Company, The: *See—*
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Jacobson, Arthur J.; and Huey, Gilbert J., to United States of America, Navy. Signal processing apparatus including doppler dispersion correction means. 3,798,590, Cl. 340-3.00r.

Jacobson, Charles L.: *See—*
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Jaffe, Joseph: *See—*
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James, Randall V., to Scott & Fetzer Company, The. Slip clutch. 3,797,621, Cl. 192-56.000.

Jankelson, Bernard, Dr.: *See—*
Porter, James D., 3,797,500.

Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Pollet, Robert Joseph; Sneyers, Hendrik Hubert; and Dierckx, Jozef Aime, to Agfa-Gevaert N.V. Photoconductive 1,2,3,4-tetrahydroquinolines employed in electrophotography. 3,798,031, Cl. 96-1.800.

Jarvis, Harold F., to Shaw Pipe Industries Ltd. Apparatus for conveying pipe longitudinally. 3,797,686, Cl. 214-338.000.

Jawuerie, Jean Marie: *See—*
Binard, Pierre; Defosse, Georges; and Jawuerie, Jean Marie, 3,798,489.

Jechart, Ernst. Gas cell atomic frequency standard of compact design. 3,798,565, Cl. 331-94.000.

Jeffers, Barney W. Recording device. 3,798,658, Cl. 346-131.000.

Jefferson Chemical Company, Inc.: *See—*
Cuscurida, Michael; and Rice, Doris Marvin, 3,798,184.
Watts, Lewis William, Jr., 3,798,255.

Jen, Dian P.: *See—*
Bochman, Raymond A.; Dessauer, Ralph G.; and Jen, Dian P., 3,798,007.

Jenike and Johanson, Inc.: *See—*
Jenike, Andrew W.; and Johanson, Jerry R., 3,797,707.

Jenike, Andrew W.; and Johanson, Jerry R., to Jenike and Johanson, Inc. Bins for storage and flow of bulk solids. 3,797,707, Cl. 222-193.000.

Jenkins, William A.; and Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Lable printing and applying apparatus. 3,798,106, Cl. 156-384.000.

Jenn-Air Corporation: *See—*
Cerola, Joseph J., 3,797,375.

Jimbo, Tadashi: *See—*
Tonooka, Hidenori; Okuni, Tetsuo; Ito, Hideo; Kawano, Michitada; Jimbo, Tadashi; and Fukasu, Shunichi, 3,797,965.

Jochaud du Plessix, Michel Guy Marie; and Lecouffe, Yves Jacques Felix, to Societe des Accumulateurs Fixes de Traction (Societe Anonyme). Electrochemical D.C. current transformer system. 3,798,527, Cl. 320-66.000.

Johanson, Jerry R.: *See—*
Jenike, Andrew W.; and Johanson, Jerry R., 3,797,707.

Johansson, Folre: *See—*
Norman, Sivert; Flystrom, Ernst; and Johansson, Folre, 3,798,395.

Johnson, Bernard A.: *See—*
Yin, Chieh-Kung; Klein, Roy W.; and Johnson, Bernard A., 3,797,595.

Johnson, Earl B.: *See—*
Downing, Benjamin A.; Johnson, Earl B.; and McClain, Richard E., 3,797,727.

Johnson, Frances H. Pet door structure. 3,797,554, Cl. 160-354.000.

Johnson, Gary R.: *See—*
Kammerer, Archer W., Jr.; and Johnson, Gary R., 3,797,255.

Johnson, Morris L.: *See—*
Sullivan, Thomas A.; Singleton, Eben L.; and Johnson, Morris L., 3,798,140.

Johnson, Paul Leonard: *See—*
Reik, Michael Kurt; and Johnson, Paul Leonard, 3,798,418.

Johnson, Peter R.: *See—*
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Johnson, Ray C.: *See—*
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Johnson Service Company: *See—*
Huebner, Thomas W., 3,798,608.

Johnson, Wayne F.: *See—*
Anderson, Norman G.; Burtis, Carl A.; Johnson, Wayne F.; Mailen, James C.; and Scott, Charles D., 3,798,459.

Johnston, Reed H., to Little, Arthur D., Inc. Coin discriminator. 3,797,307, Cl. 73-163.000.

Joly, Bertrand, to Souriau & Cie. Method and apparatus for analysis by light absorption spectrometry. 3,797,942, Cl. 356-181.000.

Jommi, Giancarlo; Mauri, Francesco; and Riva, Giovanna, to Ravizza S.A. Resolution of benzodiazepine derivatives. 3,798,212, Cl. 260-239.30d.

Jones & Laughlin Steel Corporation: *See—*
Bahm, John R., 3,798,537.

Jones, Faber B., to Phillips Petroleum Company. Hot melt adhesive formulation. 3,798,118, Cl. 161-245.000.

Jones, Howard S., Jr., to United States of America, Army. Cavity excited conical dielectric radiator. 3,798,653, Cl. 343-708.000.

Jones, James D.: *See—*
04/19/74; and Jones, James D., 3,797,374.

Jones, James J., to Texas Instruments, Incorporated. Tachometer circuit. 3,798,529, Cl. 321-6.000.

Jones, R. A., & Company, Inc.: *See—*
La Mers, Herbert, 3,798,101.

Jones, Wilbur M., Jr. Mounting system for envelope-die holders. 3,797,351, Cl. 83-698.000.

Jonsson, Arvid; and Jonsson, Junas Erland, to AB Arjon. Ice drill with adjustable cutting edges. 3,797,588, Cl. 175-18.000.

Jonsson, Junas Erland: *See—*
Jonsson, Arvid; and Jonsson, Junas Erland, 3,797,588.

Joy, Robert D.; and Colton, Russell F., to J-TEC Associates, Incorporated. Method and apparatus for sensing the relative direction and velocity of movement of a body in a liquid or gas medium. 3,797,309, Cl. 73-194.00b.

Juichi, Morishima, to Fuji Denki Seizo Kabushiki Kaisha. Shaft bearing-and-sealing device. 3,797,898, Cl. 308-187.000.

Jullien, Yves; and Cicile, Jean-Charles, to Societe Pour L'Equipment Des Industries Chimiques. Mass exchange columns. 3,797,811, Cl. 261-114.000.

Juncker, Friedrich; Kranz, Johannes; Streich, Margin; Tanz, Heiner; and Vollrath, Gerd, to Linde Aktiengesellschaft. Single-stage fractionation of natural gas containing nitrogen. 3,797,261, Cl. 62-40.000.

Jung, Ewald, to La Porte Sohne. Round furniture recess lock. 3,797,285, Cl. 70-83.000.

Jung, Friedrich: *See—*
Decker, Herbert; and Jung, Friedrich, 3,797,387.

Jung, Herbert August, to Esso Research and Engineering Company. Process of producing alcohols. 3,798,278, Cl. 260-638.00r.

Jurisch, Wilhelm: *See—*
Muller, Dieter; and Jurisch, Wilhelm, 3,797,232.

Kaaz, Albert, to Rheinmetall GmbH. Method of controlling motor-driven devices adapted to be directed onto moving targets and apparatus for applying the method. 3,798,420, Cl. 235-61.50s.

Kabushiki Kaisha Daini Seikosha: *See—*
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Kabushiki Kaisha Keiaisha Seisakusho: *See—*
Fujiwara, Hisao; Sakamoto, Kentaro; and Wada, Goro, 3,797,367.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Kumagaigumi: *See—*
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Kabushiki Kaisha Seikosha: *See—*
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Kabushiki Kaisha Suwa Siekosha: *See—*
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Kabushiki Kaisha Takenaka Komuten: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Nakayama, Shozo; Kurahashi, Masayuki; and Hattori, Mitsuhiro, 3,797,972.

Kadotani, Kenzo; Isogai, Tokio; Miyano, Yasushi; and Suzuki, Katsuhito, to Hitachi, Ltd. High-speed rotation drum for use with a centrifugal separator for gaseous mixture. 3,797,737, Cl. 233-27.000.

Kafafian, Haig. Single input controller for a communication system. 3,798,599, Cl. 340-147.00r.

Kagan, Henri; and Dang, Tuan Phat, to Institut Francais du Petrole des Carburants et Lubrifiants. Bidentate coordinates, their manufacture and application. 3,798,241, Cl. 260-340.900.

Kah, Carl L. C., Jr. Fluid distribution system operated by pressure signal. 3,797,740, Cl. 239-11.000.

Kahale, Abed G.: *See—*
Gebel, Irving; and Kahale, Abed G., 3,798,400.

Kahn, David, to AMP Incorporated. Proportional temperature control device. 3,798,413, Cl. 219-210.000.

Kaiser Aluminum & Chemical Corporation: *See—*
Neely, Joseph E.; and Brown, Sidney F., 3,798,042.

Kaiser, Elvin E.: *See—*
Fagre, Raymond C.; and Kaiser, Elvin E., 3,797,878.

Kaiser, Klaus, to Seitz-Werke G.m.b.H. Filling pipe-free filling structure with separate conduits for the tension and return gas and for withdrawing excess fluid. 3,797,535, Cl. 141-46.000.

Kakii, Shunichiro; and Hisabayashi, Satoshi, to Iwasaki Tsushinki Kabushiki Kaisha. Apparatus for cutting a roll of copying material according to the length of the original. 3,797,346, Cl. 83-203.000.

Kalikow, Peter. Adhesive applicator. 3,797,454, Cl. 118-247.000.

Kalle Aktiengesellschaft: *See—*
Kostner, Armin; and Lenhart, Richard, 3,798,302.
Rassbach, Felix; Buttner, Rolf; and Schuck, Stephan, 3,798,301.

Kalopissis, Gregoire, to Societe anonyme dite: L'Oreal. Hair coloring compositions containing organic acid anhydride-dye polymers. 3,797,994, Cl. 8-10.100.

Kalvoda, Jaroslav: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,798,214.

Kamada, Takeshi, to Ricoh Co., Ltd. Method and apparatus for detecting and representing in binary form digital indication of measuring instrument for recording. 3,798,634, Cl. 340-347.00p.

Kamin, George J.; and Kiger, William T., to GTE Sylvania Incorporated. Rare earth silica refractory ceramic materials and method for producing same. 3,798,040, Cl. 106-39.00r.

Kaminstein, Bernard, to Olivetti, Ing. C., & C., S.p.A. Apparatus for printing by reverse lithography. 3,797,388, Cl. 101-141.000.

Kamiya, Minoru. Internal combustion engine having two pistons rotatable through separate intersecting circular paths. 3,797,237, Cl. 60-39.610.

Kammerer, Archer W., Jr.; and Johnson, Gary R., to Baker Oil Tools, Inc. Under-water anchor apparatus and methods of installation. 3,797,255, Cl. 61-46.000.

Kammerer, Archer W., Jr., to Baker Oil Tools, Inc. Method for insitu anchoring piling. 3,797,259, Cl. 63-53.680.

Kampert, William P., to Aluminum Company of America. Direct current pigmenting of anodized aluminum. 3,798,137, Cl. 204-35.00n.

Kaneko, Yoshio; Matsunaga, Tsutomu; Watabe, Yoji; and Toki, Shigeyuki, to Bridgestone Tire Co. Ltd. Polyether urethane elastomer having an improved cut growth and flex crack resistance and the process for preparation thereof. 3,798,200, Cl. 260-77.5am.

Kano, Ichiro, to Canon Kabushiki Kaisha. High resolving-power duplicating lens of unit magnification. 3,797,916, Cl. 350-214.000.

Karch, Ludwig, to Messerschmitt-Bolkow-Blohm GmbH. Magnetically suspended railway system. 3,797,402, Cl. 104-130.000.

Kardach, Gerald E.; and Treleven, Robert E., to Videosonics, Inc. Panning circuit for surveillance camera. 3,798,368, Cl. 178-7.200.

Kariyone, Kazuo; Harada, Hirokichi; Kurita, Masaru; Ueda, Yutaka; Furuhashi, Takahiro; Nakamura, Hitoshi; and Watanabe, Hirotoshi, to Fujisawa Pharmaceutical Co., Ltd. Process for preparing 1,3,4-thiadiazole-2-thiol compounds. 3,798,229, Cl. 260-302.0sd.

Karll, Robert E.: *See—*
Piasek, Edmund J.; and Karll, Robert E., 3,798,165.
Piasek, Edmund J.; and Karll, Robert E., 3,798,247.

Karpal, David L., to Teledyne, Inc. Submersible battery vent plug. 3,798,073, Cl. 136-178.000.

Karrip, Alexander A.: *See—*
Barecki, Chester J.; and Karrip, Alexander A., 3,797,887.

Kasahara, Yukio; Iguchi, Takashi; Mikoda, Masanari; and Ueno, Isao, to Matsushita Electric Industrial Co., Ltd. Ultrasonic delay line. 3,798,577, Cl. 333-30.00r.

Kaske, Alan D.; Paul, Maynard C.; and Tolman, Charles H., to Sperry Rand Corporation. Quad density solid stack memory. 3,798,623, Cl. 340-174.0ma.

Kassai, Kimitaka: *See—*
Hosoda, Masayuki; and Kassai, Kimitaka, 3,797,770.

Kasuga, Masao: *See—*
Takahashi, Nobuaki; Kasuga, Masao; and Ohsaki, Nobuhide, 3,798,562.

Katagiri, Kiyoshi: *See—*
Minato, Shinpei; Goto, Jisaku; Katagiri, Kiyoshi; and Nakatani, Hiromi, 3,798,128.

Kato, Shogo: *See—*
Kitai, Kitoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yozuro; and Nagaoka, Shinji, 3,797,227.

Kato, Takashi, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece having a perpetual calendar display device. 3,797,222, Cl. 58-4.00a.

Katsuragawa Denki Kabushiki Kaisha: *See—*
Kinoshita, Koichi; and Watanabe, Masanori, 3,797,928.

Kauffman, John H., to Simpson, Herbert S., trust and Simpson, Bruce L., trustee. Modular screen. 3,797,659, Cl. 209-85.000.

Kavitsky, Mikhail Ruvimovich: *See—*
Vasilkovsky, Vitaly Pankratievich; Grebnev, Nikolai Feodosovich; Efimov, Leonid Alexandrovich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andreevich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andrevich; Pylaikin, Petr Alexeevich; Rozanov, Boris Vasilievich; Sinitsky, Vladimir Mikhailovich; and Khirdzhiev, Sergei Grigorievich, 3,797,298.

Kawada, Hiroitsu: *See—*
Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; Yano, Katsuhiko; Sugiura, Hiroshi; and Takada, Nobuo, 3,798,054.

Kawamata, Katsuyoshi: *See—*
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Kawano, Michitada: *See—*
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Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; Yano, Katsuhiko; Sugiura, Hiroshi; and Takada, Nobuo. Method of sugar coating tablets. 3,798,054, Cl. 117-100.00a.

Kay, Charles W.: *See—*
Hunter, Carl P.; and Kay, Charles W., 3,797,679.

Kayo Fastener Co., Ltd.: *See—*
Saisho, Satoru, 3,797,755.

Kays, David D.: *See—*
Frank, Kurt F.; Kays, David D.; and Kruse, John W., Jr., 3,797,552.

KCL Corporation: *See—*
Crenshaw, William N., Jr., 3,797,821.

Keating, Walter G.: *See—*
Torpie, John D.; Bell, Allan J.; Gorham, Michael L.; and Keating, Walter G., 3,798,576.

Keeling, Ronald James: *See—*
Guertin, Alfred Thomas; Keeling, Ronald James; and Schiermeier, Walter William, 3,798,117.

Keller Corporation, The: *See—*
Keller, Leonard J., 3,797,975.

Keller, Hans, to ITT Industries, Inc. Monolithic integrable flip flop circuit. 3,798,472, Cl. 307-291.000.

Keller, James J. Vacuum holding table for a photographic plate or the like. 3,797,797, Cl. 248-362.000.

Keller, Leonard J., to Keller Corporation, The. Rotor vane motor device. 3,797,975, Cl. 418-137.000.

Kellerer, Josef: *See—*
Heynisch, Winrich; Kellerer, Josef; and Schneider, Walter, 3,798,499.

Kellner, Jackson M.; and Alther, George Abraitys, to Smith International, Inc. Self guiding force applicator. 3,797,589, Cl. 175-94.000.

Kelly, Ralph; and Ritter, Edmond Jean. Mildness additive. 3,798,182, Cl. 252-546.000.

Kemp, Paul C. Process for preparing high molecular weight sulfonic acids. 3,798,261, Cl. 260-504.00r.

Kendall Company, The, mesne: *See—*
Chesky, Sheldon R., 3,797,652.

Kennametal, Inc.: *See—*
Goodfellow, Robert D., 3,797,592.

Kennecott Copper Corporation: *See—*
Skarbo, Roald R., 3,798,307.

Kenton, Joseph R., to Phillips Petroleum Company. Polythiol based sealants. 3,798,192, Cl. 260-29.20m.

Kepka, Alfred Anton Franz; and Kepka, Herwig Guenther. Safety ski pole. 3,797,845, Cl. 280-11.37b.

Kepka, Herwig Guenther: *See—*
Kepka, Alfred Anton Franz; and Kepka, Herwig Guenther, 3,797,845.

Kern, Herbert. Apparatus for controlling the exhaust emissions from internal combustion engines. 3,797,241, Cl. 60-305.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Forster, Siegfried; and Schneider, Karl-Uwe, 3,797,516.

Kerr, Harry Sydney: *See—*
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Kerr Instruments Limited: *See—*
Walsh, David Joseph; and Kerr, Harry Sydney, 3,797,498.

Kessler, James A.: *See—*
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, 3,798,650.

Keystone Consolidated Industries, Inc.: *See—*
Beckman, Melvin H., 3,797,870.

Kheifets, Rafail Efimovich: *See—*
Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Goltsman, Samuil Aronovich; Oleinik, Alexandr Ivanovich; and Frumkin, Mikhail Evseevich, 3,797,677.

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Kieronski, John P.; and Johnson, Ray C., to Whitin Machine Works, Inc. Spindle bolster. 3,797,219, Cl. 57-135.000.

Kiger, William T.: *See—*
Kamin, George J.; and Kiger, William T., 3,798,040.

Killion, Marvin L.; and Williams, Richard R. Turf perforating tool. 3,797,577, Cl. 172-22.000.

Kilmer, Lauren G.; Lively, McCabe C.; and Reynolds, Alvin E. Photographing apparatus for determining corneal radius. 3,797,921, Cl. 351-7.000.

Kimberly-Clark Corporation: *See—*
Appel, David W., 3,798,122.
Enloe, Kenneth M.; and Gresham, James T., 3,798,120.
Schmidt, George F., 3,797,495.

Kimura, Sadao: *See—*
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Kind, Donald M.: *See—*
Pinto, Peter J.; Kind, Donald M.; and McCarthy, Roy B., 3,797,536.

King, Charles Morgan; Seidel, William Carl; and Tolman, Chadwick Alma, to Du Pont de Nemours, E. I., and Company. Hydrocyanation of olefins. 3,798,256, Cl. 260-465.80r.

King, Olin B., to SCI Systems, Inc. Dispensing closure for parenteral fluid container. 3,797,521, Cl. 137-525.700.

King, Raymond John, to National Research Development Corporation. Refractometer with displacement measured polarimetrically. 3,797,940, Cl. 356-134.000.

Kinoshita, Koichi; and Watanabe, Masanori, to Katsuragawa Denki Kabushiki Kaisha. Apparatus for electrophotography. 3,797,928, Cl. 355-3.000.

Kircher, Charles E., Jr.: *See—*
Petering, Wilbur H.; Kircher, Charles E., Jr.; and Pinchak, Paul R., 3,798,170.

Kircher, Robert J.; and Setty, Richard D., to Sterling Square Sprinkler Company, Inc. Self-propelled irrigation apparatus. 3,797,517, Cl. 137-344.000.

Kirkhill Inc.: *See—*
Holm, James P.; VanGerpen, Rolland P.; and Paradis, Maurice E., 3,797,518.

Kirkpatrick, George F.: *See—*
Bassett, Howard D.; Schrage, Franklin E.; and Kirkpatrick, George F., 3,798,116.

Kirkpatrick, Max B.; deceased (by Kirkpatrick, Mildred E.; executrix); Harvey, Andrew G.; and Erichsen, Roger H., to Alaska General Credit. Article making machine and method. 3,797,228, Cl. 59-37.000.

Kirkpatrick, Mildred E.: *See—*
Kirkpatrick, Max B.; Harvey, Andrew G.; and Erichsen, Roger H., 3,797,228.

Kisbocskoi, Laszlo; Kubo, Sandor; and Reczey, Gusztav, to Tatabanyai Szenbanyak. Method and apparatus for continuous filtration of liquids with simultaneous regeneration of filter medium. 3,798,159, Cl. 210-33.000.

Kishi, Takao: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,797,748.

Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. Pesticidally active O-ethyl-O-phenyl or naphthyl-S-

(2-alkoxyethyl) phosphorothionothiolates. 3,798,292, Cl. 260-950.000.

Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, to Bayer Aktiengesellschaft. O-Alkyl-S-substituted-O-naphthylphosphorothiolates. 3,798,293, Cl. 260-964.000.

Kisovec, Adrian V. Convertiplane. 3,797,783, Cl. 244-7.00a.

Kitai, Kitoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yozuro; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Time adjustment apparatus for digital clock. 3,797,227, Cl. 58-85.500.

Kitchen, Elwyn L., Jr.; and Cwycyshyn, Walter, to General Motors Corporation. Vehicle positioning and restraint apparatus. 3,797,656, Cl. 206-335.000.

Kitsuda, Kaname: *See*—
Imagawa, Tameichi; and Kitsuda, Kaname, 3,797,556.

Kitterman, Lawrence Pete; and Rice, Howard Gene. Tray washing system. 3,798,065, Cl. 134-25.00r.

Kittl, Hans: *See*—
Fleck, Fritz; Kittl, Hans; and Schmid, Horst, 3,798,231.

Kjeldsteen, Per, to Danfoss A/S. Planetary washing machine drive with centrifugal clutch. 3,797,331, Cl. 74-752.00e.

Klane, Thomas P. Manually regulated vacuum assembly for hair clipper. 3,797,111, Cl. 30-133.000.

Klass, Donald L.; and Landahl, Carl D., to Northern Natural Gas Company, mesne. Separation of methane and nitrogen mixtures under N on-steadystate conditions. 3,797,200, Cl. 55-16.000.

Kleen Test Products, Inc.: *See*—
Larsh, Ray E.; and Urbansky, Donald I., 3,798,503.

Klein, Harold T., to Robbins Company, The. Sleeve cylinder powered drilling machine. 3,797,587, Cl. 173-152.000.

Klein, Roy W.: *See*—
Yin, Chieh-Kung; Klein, Roy W.; and Johnson, Bernard A., 3,797,595.

Kleinewefers Industrie-Companie GmbH: *See*—
Jacobs, Heinz, 3,797,558.

Klemm, Kurt; and Langenscheid, Erhard, to BYK-GULDEN Lamberg Chemische Fabrik GmbH. Process for preparing 4-hydroxy 5-substituted pyrimidines and products obtained. 3,798,220, Cl. 260-251.00r.

Kline, Luis; and Silberman, Fernando J. Thread-feeding, tension-regulating device for straight knitting machines. 3,797,279, Cl. 66-126.00r.

Klinger, Friedrich, to Schenck, Carl, Maschinenfabrik GmbH, Firma. Torque load applying testing apparatus. 3,797,304, Cl. 73-99.000.

Klockarns, Per: *See*—
Nordgren, Hans Elov; and Klockarns, Per, 3,797,428.

Klutchko, Sylvester: *See*—
Von Strandtmann, Maximilian; Shavel, John Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,798,219.
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,798,240.

Kmet, Thomas J.; and Loboda, Jon A., to Richardson Company, The. Polyoxyalkylene bis-thiourea extreme pressure agents and methods of use. 3,798,164, Cl. 252-47.500.

Knapp, Charles P.; and Eades, George S., to University of Kentucky Research Foundation, The, mesne. Dynamic childbirth simulator for teaching maternity patient care. 3,797,130, Cl. 35-17.000.

Knight, Herbert G., Jr., to Hercules Incorporated. Gelled chromium acetate cross-linked aqueous slurry type salt explosives, and manufacture. 3,798,091, Cl. 149-60.000.

Knisely, George L., Jr. Shuttlecock and launching apparatus including lengthening coupler. 3,797,472, Cl. 124-5.000.

Knowles, William S.; and Sahft, Abdou-Sabet, to Monsanto Company. Process for recovering sulfur dioxide from gases using aqueous salt solution of glutaric acid. 3,798,309, Cl. 423-243.000.

Knox, John A.: *See*—
Dill, Walter R.; Chatterji, Jiten; and Knox, John A., 3,797,575.

Knust, Elisabeth: *See*—
Naschwitz, Walter; and Knust, Elisabeth, 3,798,197.

Kobayashi, Masayoshi; Ohtani, Yoshio; and Abe, Mitsunobu, to Diesel Kiki Kabushiki Kaisha. Distributor-type fuel injection pump for internal combustion engines. 3,797,469, Cl. 123-139.00e.

Kobayashi, Shoichi; Yamaguchi, Ikuo; and Konami, Katuyoshi, to Takenaka Komuten Company, Ltd. Bearing walls and connecting members therefor. 3,797,183, Cl. 52-167.000.

Kobayashi, Waichi: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; Uehori, Kinzi; Ohtaka, Satoshi; and Yoshida, Kozaburo, 3,798,314.

Kobe Steel, Ltd.: *See*—
Takamura, Akira; Moriguchi, Yasuo; and Sato, Hiroshi, 3,798,151.

Koch, Christian, to Siemens Aktiengesellschaft. Apparatus for obtaining hydrogen. 3,798,005, Cl. 23-288.00r.

Kochanski, Aloysius J.; and Hire, Charles J. Liquid level responsive switch assembly. 3,798,401, Cl. 200-84.00c.

Kochis, August James, to Eckel Industries, Inc. Door in combination with a transom closure flap. 3,797,165, Cl. 49-9.000.

Kocis, Thomas R.: *See*—
Smith, Jessop; and Kocis, Thomas R., 3,797,155.

Kockott, Dieter. Optical apparatus with spectral filters for testing fastness of colors. 3,797,918, Cl. 350-269.000.

Koczka, Istvan: *See*—
Toth-Sarudy, Eva; Horvath, Istvan; Gyimesi, Jozsef; Ott, Istvan; Alfoldi, Laszlo; Berdy, Janos; Koczka, Istvan; Scholtz, Vilma; Szell, Valeria; and Neetomori, Eva Laszio, 3,798,129.

Kodowaki, Hidejiro: *See*—
Takahashi, Toru; Ito, Yoshio; and Kodowaki, Hidejiro, 3,797,927.

Koehring Company: *See*—
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Koenig, Karl-Heinz: *See*—
Beuiel, Peter; Koenig, Karl-Heinz; Dietsche, Wolfram; and Adolphi, Heinrich, 3,798,230.

Kogelnik, Herwig Werner; and Susnowski, Patrick, to Bell Telephone Laboratories, Incorporated. Thin film optical couplers employing mode conversion. 3,797,911, Cl. 350-96.0wg.

Koguchi, Yohko: *See*—
Ariyoshi, Yasuo; Koguchi, Yohko; and Sato, Naotake, 3,798,207.

Kogyo Gijutsuin: *See*—
Hayashi, Yutaka; and Tarui, Yasuo, 3,798,514.

Kohashi, Tadao, to Matsushita Electric Industrial Company, Limited. Variable capacitance device. 3,798,508, Cl. 317-235.00r.

Kohl, Karl. Warp knitting machine. 3,797,278, Cl. 66-84.000.

Kohn, Gustave K.: *See*—
Moore, Joseph E.; and Kohn, Gustave K., 3,798,274.

Koinuma, Kazuo, to Victor Company of Japan, Ltd. AC bias control recording system and apparatus in a magnetic recording apparatus. 3,798,673, Cl. 360-66.000.

Kojima, Chiaki: *See*—
Mori, Toshio; Kojima, Chiaki; and Tamura, Hidemasa, 3,797,913.

Komiyama, Katsuhiko: *See*—
Inoki, Kazuyoshi; Mastumura, Testuo; and Komiyama, Katsuhiko, 3,797,226.

Kommers, William J.; and Stewart, Clarence E., to Broyhill Co., The. Utility sprayer unit. 3,797,743, Cl. 239-148.000.

Konami, Katuyoshi: *See*—
Kobayashi, Shoichi; Yamaguchi, Ikuo; and Konami, Katuyoshi, 3,797,183.

Konishi, Hiromu: *See*—
Watanabe, Tadakiyo; Konishi, Hiromu; and Chiku, Ken-Ichi, 3,797,872.

Konishi, Yoshihiro; Hoshino, Norio; and Takano, Yosuke, to Nippon Hoso Kyokai. Temperature compensated frequency stabilized composite dielectric resonator. 3,798,578, Cl. 333-83.00t.

Kooistra, Willen: *See*—
Pielkenrood, Jacob; Ambrosius, Willen Lee Bernard; and Kooistra, Willen, 3,797,304, Cl. 73-99.000.

Kopaska, Arnold F. Apparatus for forming rolls of hay. 3,797,215, Cl. 56-341.000.

Koppers Company, Inc.: *See*—
Tatterson, Benjamin F., 3,798,308.

Kopperschmidt, Gerd; and Lohmann, Heinz-Jurgen, to Siemens Aktiengesellschaft. Timing current supply for a system of two channel circuits. 3,798,558, Cl. 328-163.000.

Kormann, Alfred. Radiator. 3,797,568, Cl. 165-137.000.

Kosche, Horst. Method for the development of latent electrostatic images. 3,798,049, Cl. 117-37.0le.

Koshiba, Masao: *See*—
Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, 3,798,235.

Koshman, Igor Filippovich: *See*—
Salukvadze, Viktor Samsonovich; Koshman, Igor Filippovich; and Doktorov, Leonid Borisovich, 3,797,060.

Kostas, James M., to Caterpillar Tractor Company. Pump drive for hydrostatic drive loaders. 3,797,599, Cl. 180-53.00r.

Kostner, Armin; and Lenhart, Richard, to Kalle Aktiengesellschaft. Process for improving the shape of a stick of longitudinally shirred artificial sausage casing. 3,798,302, Cl. 264-310.000.

Koubek, Michael, to Siemens Aktiengesellschaft. Active horizontal convergence circuit with two separately adjustable waveforms. 3,798,496, Cl. 315-13.00c.

Koyama, Mitsuo: *See*—
Kitai, Kitoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yozuro; and Nagaoka, Shinji, 3,797,227.

Kozaka, Setsuo: *See*—
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Kraftco Corporation: *See*—
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Kraftwerke Union Aktiengesellschaft: *See*—
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Kramer & Grebe K.G., Maschinen- und Modellfabrick: *See*—
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Kramer, Norman: *See*—
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Juncker, Friedrich; Kranz, Johannes; Streich, Margin; Tanz, Heiner; and Vollrath, Gerd, 3,797,261.

Kraus, Gabriella: *See*—
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Krauss-Maffei Aktiengesellschaft: *See*—
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Krauth, Glen W., to Allied Polymer Corporation. Plastic facing element. 3,797,904, Cl. 312-214.000.

Kreighbaum, William Eugene; and Comer, William Timmey, to Mead Johnson & Company. 3(2H)-isoquinolones. 3,798,225, Cl. 260-286.00r.

Kreissl, Ottmar; and Pritsch, Eckhard, to Maschinenfabrik Augsburg Nurnberg and URANIT Uran-Isotopentrennungs-GmbH. Device for shutting off drive motors of rotating machine parts in case of overload and/or destruction of a machine part. 3,798,504, Cl. 317-3.00r.

Kreuzer, Julius E., to Midland-Ross Corporation. Power transmission apparatus, especially cable and cable bus housings. 3,798,346, Cl. 174-15.00c.

Krishna, Surinder: *See—*
Chu, Chang Kwei; and Krishna, Surinder, 3,798,079.

Krohn, Hellmut: *See—*
Burckhardt, Manfred H.; and Krohn, Hellmut, 3,797,893.

Krone GmbH: *See—*
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Krubig, Karl-Heinz: *See—*
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Kruger, Ingo: *See—*
Henning, Wolfgang; von Hoerschelmann, Konstantin; Kruger, Ingo; and Weidlich, Herbert, 3,798,080.

Kruse, John W., Jr.: *See—*
Frank, Kurt F.; Kays, David D.; and Kruse, John W., Jr., 3,797,552.

Kruse, Walter M., to Hercules, Incorporated. Tetraalkylchromium compounds. 3,798,250, Cl. 260-438.50r.

Kubo, Moritada: *See—*
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Kubo, Sandor: *See—*
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Kubota, Hirosuke: *See—*
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Kudamtsu, Akio: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,798,293.

Kuffner, Karl: *See—*
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Kugler, Ralph W.: *See—*
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Kuipers, Pieter Geert; and Meerdink, Jan Albert, to U.S. Philips Corporation. Device for checking corporal functions. 3,798,604, Cl. 340-150.000.

Kukla, William J.; and Munzel, Howard Everett, to International Business Machines Corporation. Electrophotographic developer having controlled triboelectric characteristics. 3,798,167, Cl. 252-62.100.

Kumar, Romesh: *See—*
Nelson, Paul A.; and Kumar, Romesh, 3,797,299.

Kunze, Dieter, to Varta Aktiengesellschaft. Electrolytic cell and method for making same. 3,798,067, Cl. 136-6.0ln.

Kunze, Dieter, to Varta Aktiengesellschaft. Electrolytic and galvanic cells and method of manufacture thereof. 3,798,068, Cl. 136-6.0ln.

Kurahashi, Masayuki: *See—*
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Kurahashi, Yoshio: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,798,293.

Kurblek, John; and Locker, Victor E., to Koehring Company. Machine for harvesting and accumulating trees. 3,797,541, Cl. 144-3.00d.

Kurcha Kagaku Kogyo Kabushiki Kaisha: *See—*
Murayama, Naohiro; and Nakamura, Kenichi, 3,798,473.

Kurcha Kagoku Kogyo Kabushiki Kaisha: *See—*
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Kurio, Noriyuki: *See—*
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Kurita, Masaru: *See—*
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Kurozumi, Seizi: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; Kurozumi, Seizi; Takeuchi, Yoshinobu; and Nagahama, Shizuo, 3,798,280.

Kutzer, Hans-Joachim; Weinreich, Wolfgang; Harmsen, Lothar; and Fricke, Gerd D., to Didier-Werke AG. Outlet developed as compound body on a container holding a liquid melt. 3,797,712, Cl. 222-566.000.

Kuwada, Yutaka: *See—*
Meguro, Kanji; Kuwada, Yutaka; Henmi, Teruji; and Yamano, Togo, 3,798,226.

Kuwana, Kazutaka: *See—*
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Kvale, Oddvar: *See—*
Ollinger, Max; Markwitz, Wernhard; Niethammer, Dieter; and Kvale, Oddvar, 3,798,549.

La Borde, Joseph N., to Ethyl Corporation. Liner for covering intersecting surfaces. 3,797,185, Cl. 52-288.000.

La Mers, Herbert, to Jones, R. A., & Company, Inc. Labelling method. 3,798,101, Cl. 156-212.000.

La Pointe, Thomas A., to Aeroquip Corporation. Latch and V band coupler. 3,797,078, Cl. 24-279.000.

La Porte Sohne: *See—*
Jung, Ewald, 3,797,285.

La Telemecanique Electrique: *See—*
Faffart, Andre Georges; and Vinot, Claude Paul, 3,797,616.

Laeser, Bernard P.: *See—*
Freitas, Manuel P.; and Laeser, Bernard P., 3,798,424.

Laimins, Eric, to BLH Electronics, Inc. On-board aircraft weight transducer with mechanical offset adjustment. 3,797,302, Cl. 73-88.500.

Laing, Nikolaus; and Ludin, Ludwig, to Physikalisch-Technisches Entwicklungsburo-Laing. Heat pump with two fluid circuits. 3,797,270, Cl. 62-333.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Thibault, Jean-Jacques; and Boissin, Jean-Claude, 3,797,264.

Laitram Corporation, The: *See—*
Lapeyre, James M., 3,797,071.

Lammers, Uve H. W. High resolution airborne signal processing system. 3,798,648, Cl. 343-113.0de.

Lampe, Wolfgang; Spicar, Erich; and Persson, Bo-Goran, to Allmanna Svenska Elektriska Aktiebolaget. Means for determining the top oil temperature in transformers. 3,797,314, Cl. 73-350.000.

Lan, Pui-Yee. Seating apparatus for portable containers. 3,797,695, Cl. 220-85.00r.

Land, Edwin H.; and Norris, Philip, to Polaroid Corporation. Binocular rangefinder-viewfinder with fresnel optics. 3,797,915, Cl. 350-211.000.

Land, Edwin H.; and Bachelder, Albert J., to Polaroid Corporation. Illumination and other devices for use with photographic film pack container. 3,798,439, Cl. 240-10.650.

Land, Edwin H., to Poloroid Corporation. Temperature responsive switch for use in a self-developing camera. 3,798,667, Cl. 354-83.000.

Landahl, Carl D.: *See—*
Klass, Donald L.; and Landahl, Carl D., 3,797,200.

Landis, Bruce B.: *See—*
Allocco, Joseph P.; and Landis, Bruce B., 3,797,701.

Landwehrkamp, Hans; Schreyer, Franz; and Schiltknecht, Adolf, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for spinning sliver. 3,797,218, Cl. 57-58.890.

Lane, Bill M., to Waco Scaffold & Shoring Co. Roll out formwork support. 3,797,794, Cl. 248-295.000.

Lane, George W.: *See—*
Torres, Jorge; and Lane, George W., 3,797,510.

Lane, William C.; and Moffatt, Donald E., to Mead Corporation, The. Multiple layer decorated paper, laminates prepared therefrom and process. 3,798,111, Cl. 161-162.000.

Lang, Elliot N.: *See—*
Bitar, Lou S.; Smallwood, David S.; and Lang, Elliot N., 3,798,283.

Langenscheid, Erhard: *See—*
Klemm, Kurt; and Langenscheid, Erhard, 3,798,220.

Langford, Donald C. Skier alarm system. 3,798,631, Cl. 340-179.000.

Langham, J. Michael. Digital frequency multiple. 3,798,564, Cl. 331-1.00a.

Langlume, Francis A., to Etablissements Nativelle S.A.R.L. Compounds of propanolol and barbituric acids for the treatment of cardiovascular ailments. 3,798,221, Cl. 260-258.000.

Lansdowne, Homer D. Coaster. 3,797,796, Cl. 248-346.100.

Lanusse, Pierre; Hernandez, Rene; and Slodzian, Georges, to Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.). Apparatus for directing an energizing beam on a sample to cause secondary ion emission. 3,798,447, Cl. 250-49.0p.

Lapat, Philip E.; and Hellyer, Walter C., to Newmont Exploration Limited. Recovery of rhenium from molybdenite. 3,798,306, Cl. 423-50.000.

Lapeyre, James M., to Laitram Corporation, The. Shrimp peeling wheel support alignment locking device. 3,797,071, Cl. 17-73.000.

Lappe, Hans: *See—*
Heldt, Kurt; and Lappe, Hans, 3,797,993.

Lara, Julio: *See—*
Manzanilla, Fernando; Manjarrez, Armando; Conroy, Lino; and Lara, Julio, 3,798,157.

Laridon, Urbain Leopold, to Agfa-Gevaert N.V. Process for the production of half-tone and line work multi-colour photographic images. 3,798,034, Cl. 96-15.000.

Larralde, Edward: *See—*
Hanes, James W. E.; and Larralde, Edward, 3,797,366.

Larralde, Edward, to Vetco Offshore Industries, Inc. Floating dredge motion compensator. 3,797,139, Cl. 37-67.000.

Larsh, Ray E.; and Urbansky, Donald I., to Kleen Test Products, Inc. Protective foot cover. 3,798,503, Cl. 317-2.00b.

Larson, Arnold W. G.: *See—*
Arp, Ewald A., 3,797,697.

Larson, Eugene, to NPI Corporation, mesne. Air curtain. 3,797,373, Cl. 98-36.000.

Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Wiped film devolatilizer construction. 3,797,550, Cl. 159-2.00e.

Latinen, May V.: *See—*
Latinen, George A., 3,797,550.

Latreille, Charles W.: *See—*
Mitchell, David C.; and Latreille, Charles W., 3,798,403.

Latt, Paul: *See—*
Handle, Walter; Handle, Rainer; and Latt, Paul, 3,797,763.

Laurent, Roger, to Poma 2.000 S.A. Device for hauling vehicles with retractable wheels holding down the traction cable. 3,797,407, Cl. 104-182.000.

Lavemour, Octavio D. Indoor loadable outdoor clothes dryer. 3,797,670, Cl. 211-94.000.

Laverlochere, Jean: *See—*
Brafman, Marek; Godeau, Alain; Laverlochere, Jean; and Lecomte, Jean-Luc, 3,798,455.

Law, Clement R.: *See—*
Law, Clement R., 3,797,355.

Law, Clement R., to Law, Clement R. and Law, Josephine F. Banjo mute. 3,797,355, Cl. 84-273.000.

Law, Josephine F.: *See—*
Law, Clement R., 3,797,355.

Lawing, Burmah S.; and Rankin, Carol Dean, to Speizman Industries, Inc. Packaging apparatus and method. 3,797,713, Cl. 223-37.000.

Lawlor Industries, Inc.: *See—*
Miner, Earl L., 3,797,600.

Lawlor, John E.; and Sgombick, John, to Xerox Corporation. Educational device. 3,797,132, Cl. 35-19.00r.

Lawrence, William J.: *See—*
Iwanciow, Bernard L.; and Lawrence, William J., 3,797,238.

Lawson, Glenn H. Self-locking tube protector and deflector block for boiler tubes. 3,797,416, Cl. 110-28.00r.

Le Brasse, Gordon J.; and Stolarski, Boniface, to Federal-Mogul Corporation. Pre-alloyed nickel-free silicon-free minimal oxide low alloy iron powder. 3,798,022, Cl. 75-.5ba.

Le Cardonnel, Gerard Marcel; Sandre, Jacques Victor; and Pontois, Serge, to International Standard Electric Corporation. Control circuits. 3,798,469, Cl. 307-247.00r.

Le Suer, William Monroe, to Lubrizol Corporation, The. Combustion process and fuel compositions. 3,798,012, Cl. 44-51.000.

Lea-Ronal, Inc.: *See—*
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Lear Siegler, Inc.: *See—*
De Jarlais, Gordon M., 3,797,269.

Leary, John S., Jr., to Shell Oil Company. Methods of controlling mycotoxin production using certain dialkyl enol phosphates. 3,798,323, Cl. 424-212.000.

Leatherman, Marvin R.: *See—*
Harman, Edward W.; and Leatherman, Marvin R., 3,797,885.

Leclair, Albert W., to Nashua Corp. Copy sheet containing silver soap and an organic peroxygen oxidizing compound. 3,798,039, Cl. 96-114.100.

Lecomte, Jean-Luc: *See—*
Brafman, Marek; Godeau, Alain; Laverlochere, Jean; and Lecomte, Jean-Luc, 3,798,455.

Lecouffe, Yves Jacques Felix: *See—*
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Lee, Frank James: *See—*
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Lee, Henry C.: *See—*
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Lee, Raymond, Organization, Inc., The: *See—*
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Lee, Richard J.; and Loane, Clarence M., to Standard Oil Company. Alpha-imino amines. 3,798,270, Cl. 260-566.00r.

Lehman, Roger D. Antenna mounting fixture. 3,798,651, Cl. 343-702.000.

Leiba, Eugene: *See—*
Spitz, Erich; Leiba, Eugene; and Assouline, Georges, 3,798,452.

Leiber, Heinz, to Teldix GmbH. Anti lock control system. 3,797,892, Cl. 303-21.0eb.

Leith, Emmett, N., to United States of America, Navy. Fresnel lens scatter plate for data reduction holography. 3,797,907, Cl. 350-3.500.

Leitz, Ludwig: *See—*
Reinheimer, Gunter; and Leitz, Ludwig, 3,798,449.

Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, 50% to Gachot, Jean. Fluid operated logic elements. 3,797,520, Cl. 137-517.000.

Lemberg, Jack. Multi-purpose pressure sensitive font lettering system. 3,797,147, Cl. 40-104.190.

Lemon, Lucien W., to Paccar Inc. Locking assembly for sliding plug doors. 3,797,170, Cl. 49-220.000.

Lenhart, Richard: *See—*
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Lenk, Erich: *See—*
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Lepeer, Clarence M.: *See—*
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Lesher, George Y., to Sterling Drug, Inc. Process of cyclizing alkylidene substituted-aminomethylenemalonates. 3,798,227, Cl. 260-289.000.

Leslie Salt Co.: *See—*
Pinto, Peter J.; Kind, Donald M.; and McCarthy, Roy B., 3,797,536.

LeTaurneau, R. G., Inc.: *See—*
Friend, Aaron D.; Nelson, Gary L.; and Yoder, Royce A., 3,798,520.

Letterman, Ernest E., to Harmon Industries, Inc. Printed circuit board hitch connector. 3,797,862, Cl. 280-422.000.

Lettner, Kurt; and Finkenauer, Hans Jakob, to Messer Griesheim GmbH, mesne. Welding substance and method of making same. 3,798,078, Cl. 148-26.000.

Letzel, Karl; Stober, Helmut; and Nickel, Elmar, to Daimler-Benz AG. Instrument panel for motor vehicles, especially trucks. 3,797,605, Cl. 180-90.000.

Leusink, Andre J.: *See—*
Van Koten, Gerard; and Leusink, Andre J., 3,798,248.

Leutwyler, Kurt, to Baker Oil Tools, Inc. Snubbing apparatus. 3,797,570, Cl. 166-77.000.

Lever Brothers Company: *See—*
Van Buren, Alex Maarten; Cloosterman, Aloysius Bernardus Maria; Rek, Johannes Henricus Maria; and Zock, Hendrik Frits, 3,798,245.

Levine, Samson P.; Kugler, Ralph W.; Candek, Anthony J.; and Long, Arthur H., to Westinghouse Electric Corporation. Method of making a laminated fibrous strip. 3,798,093, Cl. 156-62.200.

Lewis, Edgar R., Jr. Self flushing live bait container for power boats. 3,797,160, Cl. 43-55.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Dickopp, Gerhard, 3,798,386.
Dickopp, Gerhard, 3,798,388.
Mroczeck, Werner; and Scherber, Werner, 3,798,062.
Schnepf, Hartmut, 3,798,036.

Licina, Charles; Miller, Robert E.; and Taylor, Nathaniel H., to Simmons Company. Trendelenberg mechanism. 3,797,052, Cl. 5-63.000.

Liddle, David E., to Owens-Illinois, Inc. Parallel addressed, multiplexed-driver plasma display system and method. 3,798,632, Cl. 340-324.00m.

Lieberum, Friedel. Detachable tread devices for automobile tires. 3,797,549, Cl. 152-175.000.

Liedberg, Ort Herman, to Atlas Copco Aktiebolag. Powder spraying apparatus. 3,797,750, Cl. 239-336.000.

Lieser, Mathias J., to Stanray Corporation. Pilot valve. 3,797,525, Cl. 137-625.600.

Lilly, Glenford. Intersection traffic director device. 3,798,592, Cl. 340-41.00a.

Limberg, Allen Leroy, to RCA Corporation. Multiplex decoding system. 3,798,376, Cl. 179-15.0bt.

Linarducci, Joseph S.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,797,145.

Lindahl, Charles B.: *See—*
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Linde Aktiengesellschaft: *See—*
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Lindemer, Terrence B., to United States of America, Atomic Energy Commission. Nuclear fuel for high temperature gas-cooled reactors. 3,798,123, Cl. 176-67.000.

Linders, Paul: *See—*
Scheffer, Harry; Schuster, Dieter; and Linders, Paul, 3,797,455.

Lindsay, Edward K., to United States of America, Navy. Cocrystallization of ammonium perchlorate and stabilization of solid propellants. 3,798,088, Cl. 149-20.000.

Lindsey, Eleanor Ruth; and Lindsey, Gordon A. Collapsible and portable cart for flexible trash. 3,797,847, Cl. 280-36.00c.

Lindsey, Gordon A.: *See—*
Lindsey, Eleanor Ruth; and Lindsey, Gordon A., 3,797,847.

Lindskog, Bertil Nils, to System Research, Inc. Apparatus for the laying and rolling out of coating or paving materials. 3,797,953, Cl. 404-103.000.

Linker, Edward A.; and Lepeer, Clarence M., to Chartmakers, Incorporated, The. Shelf display planning kit. 3,797,135, Cl. 35-53.000.

Lipkin, Edward: *See—*
Brody, Albert C.; and Lipkin, Edward, 3,798,048.

Lipps, Ben J.: *See—*
Skiens, William E.; Lipps, Ben J.; McLain, Earl A.; and Dubocq, Donald E., 3,798,185.

Little, Arthur D., Inc.: *See—*
Fougere, Guy L.; and Rothery, John L., 3,797,628.
Johnston, Reed H., 3,797,307.

Lively, McCabe C.: *See—*
Kilmer, Lauren G.; Lively, McCabe C.; and Reynolds, Alvin E., 3,797,921.

Lo Cicero, Vincent R.; and D'Entrement, Joseph. Paint brush with a brushing element of a foamed plastic. 3,797,062, Cl. 15-244.00r.

Loane, Clarence M.: *See—*
Lee, Richard J.; and Loane, Clarence M., 3,798,270.

Loboda, Jon A.: *See—*
Kmet, Thomas J.; and Loboda, Jon A., 3,798,164.

Locker, Victor E.: *See—*

Kurbick, John; and Locker, Victor E., 3,797,541.

Lockheed Aircraft Corporation: *See—*
Forsyth, Daniel H.; and Melvin, James M., Jr., 3,797,645.
Han, Yuri W., 3,798,199.
Williams, John E., Jr., 3,797,691.

Lofaro, Sante D. Cut off plate for curbing machines. 3,797,958, Cl. 404-98.000.

Lohmann, Heinz-Jurgen: *See—*
Kopperschmidt, Gerd; and Lohmann, Heinz-Jurgen, 3,798,558.

Lohmann, Jorg: *See—*
Gumm, Peter; Krubig, Karl-Heinz; Lohmann, Jorg; and Zimmermann, Josef, 3,798,299.

Loiacono, Vincent R., to Physio Medics, Inc. Post-extraction pads. 3,797,496, Cl. 128-296.000.

Lombardo, Michael S.: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,798,096.

Lonati, Francesco. Stretcher device for articles under manufacture on double cylinder circular knitting machines. 3,797,280, Cl. 66-149.00r.

Long, Arthur H.: *See—*
Levine, Samson P.; Kugler, Ralph W.; Candek, Anthony J.; and Long, Arthur H., 3,798,093.

Long, Erwin L. Blade pile and method for increasing the bearing strength of pile. 3,797,257, Cl. 61-53.500.

Loomba, Yogendra Singh, to Allied Chemical Corporation. Electromagnetically controlled safety belt retractor. 3,797,603, Cl. 180-82.000.

Lopez, Enrique; Spidll, Robert D.; and Beazley, Audrey Glenn, to Farah Manufacturing Company. Fabric turnover, mating and sewing device. 3,797,423, Cl. 112-121.110.

Lorch, Werner: *See—*
Buzzi, Gunter; and Lorch, Werner, 3,797,747.

Lotter, William; and De Vos, Frank, to South Bend Range Corporation. Tiltable cooking pan. 3,797,377, Cl. 99-407.000.

Lotus, John W.: *See—*
Hergenrother, Rudolf C.; and Lotus, John W., 3,798,495.

Lowrance Electronics, Inc.: *See—*
Cramer, Howard A., 3,797,448.

Lowther, Frank E., to Grace, W. R., & Co. Corona reactor apparatus. 3,798,457, Cl. 250-532.000.

Lowy, Paul; Manning, Stanley Arthur; and Stroms, Karl Friedrich, to International Business Machines Corporation. Ink return system for a multijet ink jet printer. 3,798,656, Cl. 346-1.000.

Loy Elliott C. Portable reusable form for concrete foundations. 3,797,800, Cl. 249-13.000.

LRC, Inc.: *See—*
Williams, Heyward Sturges; and Robbins, Robert, 3,798,471.

Luberichs, Albert: *See—*
Anna, Otta; and Luberichs, Albert, 3,797,206.

Lubrizol Corporation, The: *See—*
Le Suer, William Monroe, 3,798,012.

Lucas, Joseph, (Industries) Limited: *See—*
Hoddow, Thomas; and Gates, Eric, 3,797,751.

Lucas, Robert G., to Beloit Corporation. Expandible chuck. 3,797,772, Cl. 242-72.100.

Ludin, Ludwig: *See—*
Laing, Nikolaus; and Ludin, Ludwig, 3,797,270.

Ludke, Heinz: *See—*
Platz, Winfried; and Ludke, Heinz, 3,797,819.

Ludvigson, Berger. Apparatus for generating a pressure wave in an elongated body operatively connected to a drop hammer. 3,797,585, Cl. 173-131.000.

Luedi, Hans R.: *See—*
Steitler, Christian H.; Luedi, Hans R.; and Roze, Albert, 3,797,088.

Lunden, Clarence David: *See—*
Buehler, Walter Erwin; and Lunden, Clarence David, 3,798,646.

Lutter, Edward P.: *See—*
Edstrom, Gene H.; Lutter, Edward P.; and Robinson, Francis L., 3,798,613.

Luursema, Meerten, to U.S. Philips Corporation. Electronic timer. 3,798,464, Cl. 307-141.000.

Lyons, Vincent J., to International Business Machines Corporation. Simultaneous diffusion processing. 3,798,084, Cl. 148-189.000.

Ma, Carlton Y. W.; and Peter, John W., to Cincinnati Milacron Inc. Plastication control system for injection molding machines. 3,797,808, Cl. 259-191.000.

Maake, Douglas Herman, to Gould, Inc. Electrical surface heating assembly. 3,798,419, Cl. 219-541.000.

Mac Innis, Martin B.: *See—*
Pagnozzi, L. Rita; Patton, James C., Jr.; and Mac Innis, Martin B., 3,798,305.

MacDermid Incorporated: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,798,096.

MacDonald, Stuart G., to Eastman Kodak Company. Turntable stopping apparatus. 3,797,636, Cl. 198-210.000.

MacDuff, Richard, to Hercules Incorporated. Process for blow molding containers utilizing double pinch. 3,798,295, Cl. 264-99.000.

MacFarland, Charles H., to Scott & Fetzer Company, The. Filter bag cleaning means. 3,797,064, Cl. 15-351.000.

Macken, Elmer N., to Olin Corporation. Anode adjustment means for mercury cathode electrolytic cells. 3,798,149, Cl. 204-225.000.

Mackin, John J., Jr. Food treatment process and apparatus. 3,797,533, Cl. 141-1.000.

Maggia, Delmo. Device for supporting mirrors, plates, panels and the like. 3,797,799, Cl. 248-491.000.

Magnetic Analysis Corporation: *See—*
Brooks, Robert A.; and Bebick, Paul J., 3,798,539.
Mansson, Sven E., 3,798,538.

Magruder, Michael Keith; and Woods, Terrill Wayne, to Deere & Company. Vehicle seat with suspension and selective suspension lock-out. 3,797,798, Cl. 248-399.000.

Maguire, Barry Paul: *See—*
Young, John, Jr.; and Maguire, Barry Paul, 3,797,415.

Maier, Heinz, to Fischer-Brodbeck GmbH Prazisionsteile-Fabrik. Rotary indexing mechanism. 3,797,333, Cl. 74-826.000.

Mailen, James C.: *See—*
Anderson, Norman G.; Burtis, Carl A.; Johnson, Wayne F.; Mailen, James C.; and Scott, Charles D., 3,798,459.

Maillard, Pierre; and Roubeau, Pierre. Device for detecting leakages by using helium as a tracer gas. 3,798,536, Cl. 324-33.000.

Majeron, Frank: *See—*
Pentz, Howard L.; Parkhani, Chandrakant; and Majeron, Frank, 3,797,664.

Makarov, Mikhail Nikolaevich: *See—*
Tseitlin, Aron Yakovlevich; Tikhonov, Sergei Sergeevich; Martynov, Oleg Viktorovich; Makarov, Mikhail Nikolaevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Gorlov, Semen Maximovich; Bashkov, Vladimir Alexeevich; and Sitnov, AnatolyGeorgievich, 3,797,557.

Make, Siegfried: *See—*
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Maki, Syoji: *See—*
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Makita, Naoki: *See—*
Yamawaki, Shunro; Makita, Naoki; and Hirose, Kazuhiko, 3,797,703.

Maley, Gerald A.: *See—*
Henle, Robert A.; Maley, Gerald A.; and Pricer, Wilbur D., 3,798,606.

Malkov, Pavel Andreevich: *See—*
Vasilkovsky, Vitaly Pankratievich; Grebnev, Nikolai Feodosovich; Efimov, Leonid Alexandrovich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andreevich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andrevich; Pylaikin, Petr Alexeevich; Rozanov, Boris Vasilievich; Sinitsky, Vladimir Mikhailovich; and Khirdzhiev, Sergei Grigorievich, 3,797,298.

Mall, Aaron: *See—*
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, 3,798,650.

Mallonee, William C.; and Harris, Henry E., to Monsanta Company. Gas activated bonding or undrawn polyamide articles. 3,798,104, Cl. 156-306.000.

Malm, Robert N., to General Electric Company. Rounded and halogen lamp with spiral exhaust tube and method of manufacture. 3,798,491, Cl. 313-315.000.

Mamo, Anthony C., to Borg-Warner Corporation. Adjustable crib with variable degrees of confinement and accessibility. 3,797,053, Cl. 5-97.000.

Mandrel Industries, Inc.: *See—*
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Mangood Corporation: *See—*
Yin, Chieh-Kung; Klein, Roy W.; and Johnson, Bernard A., 3,797,595.

Manjarrez, Armando: *See—*
Manzanilla, Fernando; Manjarrez, Armando; Conroy, Lino; and Lara, Julio, 3,798,157.

Mann, Eugene H. Ignition point assembly with guide posts for movable contacts. 3,798,396, Cl. 200-30.00a.

Manning, Robert E., to Sandoz-Wander, Inc. 6 or 7-substituted 4 or 8-(amino-1-methylbutylamino) quinolines as hypolipidemic agents. 3,798,322, Cl. 424-200.000.

Manning, Stanley Arthur: *See—*
Lowy, Paul; Manning, Stanley Arthur; and Stroms, Karl Friedrich, 3,798,656.

Mannion, William A.: *See—*
Saferstein, Lowell; and Mannion, William A., 3,798,201.

Mansfeld, Hans, to Migua Witteldeutsche Gummi- und Asbestgesellschaft Hammerschmidt & Co., Firma. Bracket structure for elastic expansion cap sealing devices. 3,797,188, Cl. 52-396.000.

Manske, Hans E., to Zenith Radio Corporation. Automatic degaussing in a television receiver with constant voltage transformer. 3,798,493, Cl. 315-8.000.

Manske, Hans E., to Zenith Radio Corporation. Solid-state television receiver with magnetically regulated power supply. 3,798,497, Cl. 315-29.000.

Mansson, Sven E., to Magnetic Analysis Corporation. Pulse eddy current testing apparatus with ramp phase shifter. 3,798,538, Cl. 324-40.000.

Manzanilla, Fernando; Manjarrez, Armando; Conroy, Lino; and Lara, Julio, to Instituto Mexicano Del Petroleo. Process for the removal of contaminants from hydrocracking feedstocks. 3,798,157, Cl. 208-251.000.

Manzhelo, Valery Alexandrovich: *See—*

Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Manzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 3,798,619.

Marbark Industries, Inc.: *See—*
Smith, Leward N., 3,797,349.

Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Method for splicing optical fibers. 3,798,099, Cl. 156-158.000.

Marchadier, Charles; and Togny, Jean, to Rhone-Poulenc-Textile. Apparatus for making spunbonded fabrics. 3,798,100, Cl. 156-167.000.

Marchandise, Victor Felix; Signoret, Elie Louis; Bal, Gerard Andre; and Barilero, Lucien Eugene, to Etat Francais. Exploding wire fuse component. 3,797,393, Cl. 102-28.0eb.

Marcona Corporation: *See—*
Archibald, William R.; and Gilbert, John J., 3,797,590.

Marcy, Raymond, to Thomson-CSF. Systems for writing patterns on photosensitive substrates. 3,797,935, Cl. 355-53.000.

Marek, Josef; Hayn, Gunther; and Rotzer, Harald, to Austria Fabakwerke Aktiengesellschaft vorm. Osterreichische Fabakregie. Process for testing the filling capability of tobacco and devices for performing such process. 3,798,456, Cl. 250-308.000.

Marhefka, Andrew J.; and Ravotto, Martin H., to United States of America, Army. Telescoping airborn launch tube. 3,797,360, Cl. 89-37.50d.

Marion, George J. Coextrusion apparatus for flat film. 3,797,987, Cl. 425-463.000.

Markwitz, Wernhard: *See—*
Ollinger, Max; Markwitz, Wernhard; Niethammer, Dieter; and Kvale, Oddvar, 3,798,549.

Marozzi, Alfred A.; and Fuzia, Joseph, said Fuzia assor. to Bell-Mark Corporation. Ink cartridge with sealing means for reciprocal printing heads. 3,797,390, Cl. 101-333.000.

Mars, James E.: *See—*
Poole, Donald R.; Stang, Peter L.; Mars, James E.; and Williams, Duane A., 3,797,854.

Marsh, Robert E.: *See—*
Brane, Earl P.; Brane, Douglas K.; Marsh, Robert E.; and Hammond, Holton H., 3,797,523.

Marsh, Ronald W.: *See—*
Nagy, Ernest J.; Shaver, William R.; and Marsh, Ronald W., 3,797,411.

Marshall, Robert G. Thermal breaking of rocks. 3,797,757, Cl. 241-1.000.

Martelli, Fabrizio G. Rotary bag making apparatus. 3,797,368, Cl. 93-8.00r.

Martin, Erwin; and Beil, Franz, to Siemens Aktiengesellschaft. Electroacoustic transducer. 3,798,392, Cl. 179-115.5es.

Martin, Frank J., to Chrysler Corporation. Vacuum reducer valve. 3,797,512, Cl. 137-116.500.

Martino, Louis J.; Blaese, Herbert R.; and Steinhofer, Robert J., to Avanti R & D, Inc. Tunable sleeve antenna. 3,798,654, Cl. 343-745.000.

Marton, Alejando B.: *See—*
Frambs, Terrence K.; and Marton, Alejando B., 3,798,597.

Martynov, Oleg Viktorovich: *See—*
Tseitlin, Aron Yakovlevich; Tikhonov, Sergei Sergeevich; Martynov, Oleg Viktorovich; Makarov, Mikhail Nikolaevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Gorlov, Semen Maximovich; Bashkov, Vladimir Alexeevich; and Sitnov, AnatolyGeorgievich, 3,797,557.

Martz, Lyle E.: *See—*
Soderquist, Frederick J.; and Martz, Lyle E., 3,798,178.

Maruyama, Shiro; Iwai, Ken; Yabuuchi, Yasuo; and Maki, Syoji, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of outfitting and engine room of a ship. 3,797,439, Cl. 114-77.00r.

Marvin Glass & Associates: *See—*
Glass, Marvin I.; and Morrison, Howard J., 3,797,831.

Masak, Raymond J.: *See—*
Baurle, Herbert F.; and Masak, Raymond J., 3,798,645.

Maschinenfabrik Augsburg Nurnberg: *See—*
Kreissl, Ottmar; and Pritsch, Eckhard, 3,798,504.

Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft: *See—*
Zeller, Rainer, 3,798,089.

Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See—*
Buzga, Heinrich, 3,797,661.

Masopust, Otto T., Jr.: *See—*
Brown, Donald R.; and Masopust, Otto T., Jr., 3,797,771.

Master Lock Company: *See—*
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Mastumura, Testuo: *See—*
Inoki, Kazuyoshi; Mastumura, Testuo; and Komiyama, Katsuhiko, 3,797,226.

Masuda, Isao: *See—*
Izumitani, Tetsuro; and Masuda, Isao, 3,798,041.

Masuda, Noboru; and Kuroyanagi, Masasi, to Denki Onkyo Co., Ltd. Decimal-to-binary code conversion circuit. 3,798,433, Cl. 235-155.000.

Matesevac, Ronald A.: *See—*
Rogers, Jack M.; Porter, Charles; and Matesevac, Ronald A., 3,797,990.

Matsuchita Electric Industrial Co., Ltd.: *See—*
Hosono, Hiroo; Minamide, Seiko; and Fukushima, Juichi, 3,797,777.

Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Electrical shutter. 3,798,664, Cl. 354-51.000.

Matsui, Junichi: *See—*
Nakanishi, Toru; Matsui, Junichi; Yonehara, Setsuji; Aoki, Masahiro; Ishiguro, Kiyonori; Satake, Tatsuo; and Azuma, Shingi, 3,797,666.

Matsumoto, Kazuhiro: *See—*
Atsukawa, Masumi; Nishimoto, Yoshihiko; and Matsumoto, Kazuhiro, 3,798,310.

Matsumoto, Peruo, to Epoch Company, Ltd. Encoding switch for educational device. 3,798,639, Cl. 340-365.00s.

Matsunaga, Tsutomu: *See—*
Kaneko, Yoshio; Matsunaga, Tsutomu; Watabe, Yoji; and Toki, Shigeyuki, 3,798,200.

Matsushita Electric Corporation of America, mesne: *See—*
Dorren, Louis, 3,798,377.

Matsushita Electric Industrial Co., Ltd.: *See—*
Furuya, Sachinori, 3,798,356.
Kasahara, Yukio; Iguchi, Takashi; Mikoda, Masanari; and Ueno, Isao, 3,798,577.
Mori, Yubi; and Hanakura, Morihiro, 3,797,725.
Saito, Teruo; Ide, Susumu; Yasuda, Tooru; and Enomoto, Shigeru, 3,798,362.
Tomita, Masao; and Fujisawa, Kiyoji, 3,798,559.

Matsushita Electric Industrial Company: *See—*
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Matsushita Electric Industrial Company, Limited: *See—*
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Matsushita Electric Industries Co., Ltd.: *See—*
Higashiyama, Kenji; and Hirata, Hiroshi, 3,798,147.

Matsushita Electric Works Ltd.: *See—*
Yamada, Norio; Iguchi, Yoji; Tanaka, Yoshimasa; Oho, Tatsuke; and Ikejima, Yoritaka, 3,797,109.

Matsushita, Tokuo; and Watanabe, Satoshi, to Okaya Denki Sangyo Kabushiki Kaisha. Indicator discharge tube. 3,798,480, Cl. 313-109.500.

Matthews, Leo, J., to General Motors Corporation. Occupant restraint system. 3,797,856, Cl. 280-150.0ab.

Matthews, Lyle E. Hydrofoil control means. 3,797,434, Cl. 114-66.50m.

Matzner, Markus: *See—*
McGrath, James Edward; and Matzner, Markus, 3,798,289.

Mauri, Francesco: *See—*
Jommi, Giancarlo; Mauri, Francesco; and Riva, Giovanna, 3,798,212.

Maus, Fritz: *See—*
Herzhoff, Peter; Gref, Hans; Maus, Fritz; Browtzki, Kurt; Friedsam, Josef; Wasser, Willi; and Schweicher, Wolfgang, 3,797,551.

Mawhinney, Robert C.; McCone, Alan L., Jr.; and Foote, Alvin L., to MB Associates. Multi-flechette weapon. 3,797,359, Cl. 89-1.800.

Mayer, Norbert Adolf; and Moll, Gerhard. Facsimile transmission system. 3,798,358, Cl. 178-5.600.

MB Associates: *See—*
Mawhinney, Robert C.; McCone, Alan L., Jr.; and Foote, Alvin L., 3,797,359.

McAusland, Robert R., to Anderson & Thompson Ski Co., Inc. Safety binding. 3,797,841, Cl. 270-11.35r.

McCann, Gordon D.; and Dumitru, Earl T., to Dow Chemical Company, The. Preparation of latexes by direct dispersion of acidic organic polymers into aqueous alkaline media containing certian alkanols. 3,798,194, Cl. 260-29.60e.

McCarthy, Donald J., to Jacobs Manufacturing Company, The. Electrically insulated chuck for hand-held drills. 3,797,960, Cl. 408-240.000.

McCarthy, John J.: *See—*
Desmond, Richard J.; Fronczek, Edward J.; and McCarthy, John J., 3,797,103.

McCarthy, Roy B.: *See—*
Pinto, Peter J.; Kind, Donald M.; and McCarthy, Roy B., 3,797,536.

McCarthy, William G. Adjustable shear bed. 3,797,676, Cl. 214-1.00r.

McCay, Frank V., Jr., to Envirotech Corporation. Automatic unidirectional brake. 3,797,614, Cl. 188-134.000.

McClain, Richard E.: *See—*
Downing, Benjamin A.; Johnson, Earl B.; and McClain, Richard E., 3,797,727.

McClenahan, James O., to United States of America, National Aeronautics and Space Administration. High-speed shutter. 3,797,919, Cl. 350-270.000.

McColgin, William C.; and Webster, Frank G., to Eastman Kodak Company. Polymethine dye lasers. 3,798,566, Cl. 331-94.501.

McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, to Bendix Corporation, The. Means for synchronizing clocks in a time ordered communications system. 3,798,650, Cl. 343-225.000.

McCone, Alan L., Jr.: *See—*
Mawhinney, Robert C.; McCone, Alan L., Jr.; and Foote, Alvin L., 3,797,359.

McCormick, Harold E.: *See—*
Prasse, Herbert F.; McCormick, Harold E.; and Ott, William F., 3,797,973.

McCoy, Robert Gordon: *See—*

Coyne, James Christopher; McCoy, Robert Gordon; and Smith, Arnold Ray, 3,797,586.

McCracken, Alexander Ernest, to Nicol & Andrew Limited. Lighting unit and reflector therefor. 3,798,442, Cl. 240-51.11r.

McCrery, David N., Jr. Livestock trap and sorter. 3,797,463, Cl. 119-155.000.

McCroft, Alan David: *See—*
Hannah, Clifford George; Shuttleworth, Reginald; and McCroft, Alan David, 3,798,105.

McDermott, Derrick, to Thomas Broadbert & Sons Limited. Self-centering crossfolder. 3,797,820, Cl. 270-69.000.

McDow, Ronald N. Drawing instrument. 3,797,119, Cl. 33-27.00m.

McGee, Andrew T. Leverage operated screwdriver. 3,797,546, Cl. 145-61.001.

McGill Manufacturing Company, Inc.: *See—*
Smith, Richard J., 3,797,901.

McGonigal, Charles: *See—*
Ellis, Benjamin Clement, Jr.; Scholly, Christian; McGonigal, Charles; and Snyder, John Howard, 3,798,587.

McGowan, Joseph W.: *See—*
Carter, John L.; and McGowan, Joseph W., 3,798,563.

McGrath, James Edward; and Matzner, Markus, to Union Carbide Corporation. Vinyl halide polymer-olefin copolymer alloys. 3,798,289, Cl. 260-895.000.

McIlwain, Carl E.; and Beaver, Edward A., to University of California. Multichannel digital photometer. 3,798,453, Cl. 250-213.0vt.

McKay, Robert: *See—*
Glass, Marvin I.; McKay, Robert; and Breslow, Jeffrey, 3,797,164.

McLain, Earl A.: *See—*
Skiens, William E.; Lipps, Ben J.; McLain, Earl A.; and Dubocq, Donald E., 3,798,185.

McLean, Arthur F., to Ford Motor Company. Low emissions catalytic combustion system. 3,797,231, Cl. 60-39.51h.

McManimie, Robert J.; and Richard, William R., Jr., to Monsanto Company. Ethylene/propylene block copolymers. 3,798,288, Cl. 260-878.00b.

McMillian, Lonnie S.; and Frohwein, George E., to SCI Systems, Inc. Rate-of-change combustion and combination detection apparatus. 3,798,625, Cl. 340-237.00s.

McNerney, Roger J.: *See—*
Thomas, Howard M.; Olszowka, Robert F.; and McNerney, Roger J., 3,797,357.

McRae, Thomas Earle. Accident proof, tamper proof boat drain plug. 3,797,442, Cl. 114-197.000.

McRoskey, John W.: *See—*
McRoskey, Leonard H.; McRoskey, John W.; and Swartz, Delbert D., 3,797,163.

McRoskey, Leonard H.; McRoskey, John W.; and Swartz, Delbert D., to Republic Tool & Manufacturing Corporation. Toy chain saw with sounders for simulating idling and chain saw driving noises. 3,797,163, Cl. 46-39.000.

McWilliams, Orcenith D.; and Rice, Roger A., to Caterpillar Tractor Company. Fluid suspension system. 3,797,140, Cl. 37-129.000.

Mead Corporation, The: *See—*
Lane, William C.; and Moffatt, Donald E., 3,798,111.

Mead Johnson & Company: *See—*
Kreighbaum, William Eugene; and Comer, William Timmey, 3,798,225.

Meadows, James Edward; Horsman, Larry Ray; and Carpentier, Anthony Louis, to Storage Technology Corporation. Maintenance facility for a magnetic tape subsystem. 3,798,614, Cl. 340-172.500.

Medallion Instruments, Inc.: *See—*
Carpenter, William R.; and Sponaas, Richard M., 3,797,449.

Meder, Siegfried R.; and Dixon, Thomas E., to American Schack Company, Inc., The. Cage type radiation recuperator. 3,797,569, Cl. 165-169.000.

Medislide Industries, Inc.: *See—*
Mindick, Leo R., 3,798,423.

Meek, James M.; Ravilious, Clarence F.; and Heinard, Weilden G., to United States of America, Army. Schwarzschild radar antenna utilizing a ring switch for generating a sector scan. 3,798,655, Cl. 343-754.000.

Meeks, James E., Jr. Dual post band seater. 3,797,116, Cl. 32-66.000.

Meerdink, Jan Albert: *See—*
Kuipers, Pieter Geert; and Meerdink, Jan Albert, 3,798,604.

Meguro, Kanji; Kuwada, Yutaka; Henmi, Teruji; and Yamano, Togo, to Takeda Chemical Industries, Ltd. 3-Acylamino-4-pheylquinolines carrying a substituent on the benzene ring. 3,798,226, Cl. 260-287.00r.

Meier, Ernst; Kuffner, Karl; and Glockner, Hans, to Agfa-Gevaert Aktiengesellschaft. Process for the preparation of 3-anilinopyrazolones-(5). 3,798,234, Cl. 260-310.00a.

Meiller, Francois, to Produits Chimiques Pechiney-Saint-Gobain. Alkyl fluorohexahalogenoisopropoxycarboxylate silicon derivatives and polymers and copolymers thereof. 3,798,251, Cl. 260-448.20b.

Melcher, Domenic. Electronic device for quintupling a binary-coded decimal number. 3,798,434, Cl. 235-159.000.

Melchior, Gerard, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Color selection circuit for visual display unit. 3,798,363, Cl. 178-6.000.

Melin, Martin J.; and Wallace, Rodney L., to Union Carbide Corporation. Plastic bag having elongate apertures angularly disposed. 3,797,732, Cl. 229-53.000.

Mellow, Dale F., to Hercules Incorporated. Manufacture of a burning rate deterrent coated propellant. 3,798,085, Cl. 149-10.000.

Melvin, James M., Jr.: *See—*
Forsyth, Daniel H.; and Melvin, James M., Jr., 3,797,645.

Melvin, William J., to Collins Radio Company. Data modem apparatus. 3,798,371, Cl. 178-67.000.

Mendenhall, Edward V. Method of making branched plastic conduits. 3,798,097, Cl. 156-152.000.

Menefee, Julius H.; Novak, William P.; and White, John A., to Bicron Corporation. Scintillation meter-type spectrometer. 3,798,448, Cl. 250-71.50r.

Meneghini, Pietro: *See—*
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Menelly, Richard A., to International Telephone and Telegraph Corporation. Emissive electrode. 3,798,492, Cl. 313-346.000.

Menichetti, Piero. Lamp consisting of modular elements. 3,798,438, Cl. 240-10.00r.

Mennekes, Werner: *See—*
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Mercereau, James E.: *See—*
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Patchett, Arthur A.; Mrozik, Helmut; and Hoff, Dale B., 3,798,258.
Ziegler, Carl; and Sprague, James M., 3,798,262.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
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Mercurio, Leonard. Radially arranged tumbler type lock. 3,797,289, Cl. 70-363.000.

Mermudez, Javier Rey. Boat for stern fishing without a ramp with two decks. 3,797,432, Cl. 114-.50a.

Mervyn, Leonard, to Glaxo Laboratories, Limited. Process for removing cyanide ions from solutions of cabalt (I) corrinoids. 3,798,211, Cl. 260-211.700.

Merz, Edmund H., to Continental Can Company, Inc. Apparatus for injection blow molding plastic articles. 3,797,983, Cl. 425-242.00b.

Messer Griesheim GmbH, mesne: *See—*
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Messerschmitt-Bolkow-Blohm GmbH: *See—*
Karch, Ludwig, 3,797,402.
Muller, Gunther, 3,797,784.

Mesta Machine Company: *See—*
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Metzler, Othmar E. Circular embroidery-lace articles. 3,797,427, Cl. 112-266.000.

Meyer, Delbert H., to Standard Oil Company. Trimellitic acid anhydride product recovery from pseudocumene oxidation effluent. 3,798,238, Cl. 260-346.400.

Meyer, Gunter; and Grebe, Ludwig, to Kramer & Grebe K.G., Maschinen- und Modellfabrick. Apparatus for comminuting and cooking of raw meat used for the manufacture of cooked sausage. 3,797,376, Cl. 99-353.000.

Meyers, Stanley Thayer, 1/2 to Oliveras, Rene. Sound reproducing system utilizing motional feedback. 3,798,374, Cl. 179-1.00f.

Michelson, Gunnar P. Razor with guarded razor edge. 3,797,110, Cl. 30-82.000.

Miciukiewicz, Joseph P.; Morrison, Douglas I.; Pollak, Phikip, Jr.; and Ross, William A., to Pitney-Bowes, Inc. Sequence control apparatus for electrophotographic copying machine. 3,797,347, Cl. 83-205.000.

Miciukiewicz, Joseph F.; Pollak, Philip, Jr.; Morrison, Douglas I.; and Ross, William A. Sequence control apparatus for electrophotographic copying machine. 3,797,931, Cl. 355-13.000.

Microlab/Fxr: *See—*
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Midland-Ross Corporation: *See—*
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Mignotte, Henry X., to Baker Oil Tools, Inc. Apparatus for selective formation treatment. 3,797,572, Cl. 166-127.000.

Migua Witteldeutsche Gummi- und Asbestgesellschaft Hammerschmidt & Co., Firma: *See—*
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Mikoda, Masanari: *See—*
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Milchem Incorporated: *See—*
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Miles, John R., to Gulf & Western Industries, Inc. Traffic signal lens. 3,798,445, Cl. 240-106.100.

Miles Laboratories, Inc.: *See—*
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Miller Brewing Company: *See—*
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Miller, Cole R., to Ecodyne Corporation, mesne. Ion exchange resin separation apparatus and method employing sonic means to senser resin level. 3,797,660, Cl. 209-499.000.

Miller, David M., to Swift & Company. Modification of protein with ethylenimine. 3,798,208, Cl. 260-119.000.

Miller, Edwin E.: *See—*
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Miller, Ervin R.: *See—*
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Miller, Gerald M.; and Munter, George M., to Buckbee-Mears Company. System and method for making multigraded TV masks. 3,797,934, Cl. 355-52.000.

Miller, John W. V., to Owens-Illinois, Inc. Electronic conditioning of gas discharge display/memory device. 3,798,501, Cl. 315-169.0tv.

Miller, Lewis S., to Weyerhaeuser Company. Electroconductive coating, electrostatographic copy sheet, and methods of making and using the same. 3,798,032, Cl. 96-1.500.

Miller, Robert E.: *See—*
Licina, Charles; Miller, Robert E.; and Taylor, Nathaniel H., 3,797,052.

Miller, Roland E.; and Wayne, Clyde D., to Kraftco Corporation. Rapid slicing machine. 3,797,343, Cl. 83-80.000.

Miller, Russell S. Marker display device. 3,797,143, Cl. 40-10.00r.

Milner, Edward Francis Godfrey; Peters, Ernest; Swinkels, Godefridus Maria; and Vizsolyi, Andrew Imre, to Cominco Ltd. Copper hydrometallurgy. 3,798,026, Cl. 75-104.000.

Minakov, Anatoly Gavrilovich: *See—*
Bondarev, Konstantin Timofeevich; Golius, Tamara Efimovna; Minakov, Anatoly Gavrilovich; Minakov, Vladimir Anatolievich; and Strekalov, Anatoly Vastlievich, 3,798,014.

Minakov, Vladimir Anatolievich: *See—*
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Minato, Shinpei; Goto, Jisaku; Katagiri, Kiyoshi; and Nakatani, Hiromi, to Takeda Chemical Industries, Ltd. Method for the production of granular enzyme preparation. 3,798,128, Cl. 195-68.000.

Mindick, Leo R., to Medislide Industries, Inc. Diagnostic data card construction. 3,798,423, Cl. 235-61.12r.

Mine, Akihiko: *See—*
Akiba, Keiichiro; Fujinami, Akira; Mine, Akihiko; Satomi, Takeo; and Hino, Naganori, 3,798,233.

Miner, Carroll R., to General Instrument Corporation. Fine tuning means for step-by-step TV tuner. 3,797,322, Cl. 74-10.540.

Miner, Earl L., to Lawlor Industries, Inc. Power pack mount. 3,797,600, Cl. 180-64.00m.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. Fungicidal compositions and their use. 3,798,327, Cl. 424-274.000.

Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert T.; and Semon, Warren L., to Monsanto Company. Magnetic bubble computer. 3,798,607, Cl. 340-172.500.

Minolta Camera Kabushiki Kaisha: *See—*
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Mitchell, David C.; and Latreille, Charles W., to D.A.B. Industries, Inc. Apparatus for adhering friction material to ring-like element. 3,798,403, Cl. 219-10.530.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Kinzoku Kogyo Kabushiki Kaisha: *See—*
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Mitsuhishi Chemical Industries, Ltd.: *See—*
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Miyano, Yasushi: *See—*
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Miyaoka, Senri; and Ohgoshi, Akio, to Sony Corporation. Flying-spot scanner system. 3,798,355, Cl. 178-5.4cd.

Miyoshi, Hiroshi; Shinohara, Tomoo; and Tateishi, Hiroyuki, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Photo-degradable styrene type resin compositions. 3,798,187, Cl. 260-2.5hb.

Mizuno, Kiyohiko: *See—*
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Mobil Oil Corporation: *See—*
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Mochizuki Manufacturing Company, Limited: *See—*
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Mollart Engineering Company Limited, The: *See—*
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Mollura, Carlos A. Filler-siphon assembly for a water bed. 3,797,538, Cl. 141-313.000.

Molnar, Michael. Machine for mass production of both medium and short lengths of tubing. 3,797,338, Cl. 82-46.000.

Molyneux, Lindsay. Apparatus and method for detecting the evolution of gas from an electric cell and for controlling the charging of said cell in response to said detection. 3,798,528, Cl. 320-46.000.

Monarch Marking Systems, Inc.: *See—*
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Monogram Industries, Inc.: *See—*
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Moore, Arthur Ronald. Towel cutter apparatus. 3,797,348, Cl. 83-209.000.

Moore, James M. Crane. 3,797,675, Cl. 214-1.00d.

Moore, Joseph E.; and Kohn, Gustave K., to Chevron Research Company. Insecticidal phenols. 3,798,274, Cl. 260-609.00f.

Moore, Richard D. Convertible boat top. 3,797,436, Cl. 114-71.000.

Morgatroyd, Paul John: *See—*
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Mori, Toshio; Kojima, Chiaki; and Tamura, Hidemasa, to Sony Corporation. Electro-optic display device. 3,797,913, Cl. 350-150.000.

Mori, Yubi; and Hanakura, Morihiro, to Matsushita Electric Industrial Co., Ltd. Automatic soldering machine. 3,797,725, Cl. 228-41.000.

Moriguchi, Yasuo: *See—*
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Morishita, Masao, to Howa Sangyo Kabushiki Kaisha. Door holder. 3,797,871, Cl. 292-209.000.

Morita, Eiichi, to Monsanto Company. Method for enhancing the adhesiveness of fiber to rubber and the treated fiber. 3,798,051, Cl. 117-75.000.

Moritz, Donald B.; Wilson, David O.; and Mueller, Francis B., to Waco Scaffold & Shoring Co. Shoring scaffold and formwork support. 3,797,793, Cl. 248-295.000.

Moriya, Sakai: *See—*
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Morris, Harold D., to Systron-Donner Corporation. Pivot mechanism with electronic dither circuit. 3,797,321, Cl. 73-517.00b.

Morris, Robert T.: *See—*
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Morris, Wolford A. Food fryer with continuously filtered cooking oil. 3,797,378, Cl. 99-408.000.

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Moser, Raymond L.; and Oldenburg, Dorrance, to Caterpillar Tractor Company. Pulpwood harvester. 3,797,539, Cl. 144-3.00d.

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Mroczeck, Werner; and Scherber, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Method of manufacturing a planar device. 3,798,062, Cl. 117-212.000.

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MTS Systems Corporation: *See—*
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Mueller, Ferd A., to Colorado Refractories Corporation. Four-piece hot top with foldable subassemblies. 3,797,801, Cl. 249-197.000.

Mueller, Francis B.: *See—*
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Mueller, Fred; and Winkler, Rudolf, to Sandoz Ltd. Process for the production of 1-nitroanthraquinone substantially free from dinitroanthraquinone. 3,798,244, Cl. 260-369.000.

Mueller, Richard E.: *See—*
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Muenker, Adolf H.; Beach, Leland K.; and White, Herschel T., to Esso Research and Engineering Company. High-energy solid propellant binder. 3,798,086, Cl. 149-19.100.

Mule, James. Vehicle shelter employing a dual operating selective hinge apparatus. 3,797,178, Cl. 52-66.000.

Mule, Leonard C., to Fisher, Charles, Cossman, Peter J. and Rembish, Linda. Paint and adhesive applicator. 3,797,706, Cl. 222-187.000.

Muller, Dieter; and Jurisch, Wilhelm, to Daimler-Benz Aktiengesellschaft. Vehicle gas turbines with ratio couplings therebetween-therefor. 3,797,232, Cl. 60-39.16r.

Muller, Gunther, to Messerschmitt-Bolkow-Blohm GmbH. Automatically operating device for sealing a fuselage recess of aircrafts. 3,797,784, Cl. 244-46.000.

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Munzel, Howard Everett: *See—*
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Muramoto, Seishi, to Kabushiki Kaisha Komatsu Seisakusho. Device for guiding a bar of a cutter of a peeling machine. 3,797,337, Cl. 82-20.000.

Murata, Nobuo. Smoking set. 3,797,700, Cl. 221-145.000.

Murayama, Naohiro; Hosokawa, Toshio; and Shirai, Morio, to Kureha Kagoku Kogyo Kabushiki Kaisha. Method for producing a mixed polymer of vinylidene fluoride polymers. 3,798,287, Cl. 260-878.00r.

Murayama, Naohiro; and Nakamura, Kenichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polymer type electroacoustic transducer element. 3,798,473, Cl. 310-8.000.

Murdock, Forrest Lee, Sr., to Fishmaster Products, Inc. Means for separating heavier from lighter components of coming led fluid. 3,797,203, Cl. 55-176.000.

Murphy, Alfred M.; Hagerman, Kenneth C.; and Wagner, Nicholas A., to Reynolds Metals Company. Reclamation of aluminous skim. 3,798,024, Cl. 75-68.00r.

Murphy, John Michael: *See—*
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Murray, Adele. Spry springy sprouting clown. 3,797,166, Cl. 46-119.000.

Mutchler, Paul A., to United States of America, Army. Forced convection oven. 3,797,473, Cl. 126-21.00a.

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Muzzi, Vincent; and Muzzi, Primo. Tamping apparatus. 3,797,382, Cl. 100-100.000.

Myers, Richard Adams, to General Dynamics Corporation. Method for forming a ship hull section. 3,797,099, Cl. 29-471.300.

N L Industries, Inc.: *See—*
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Nagahama, Shizuo: *See—*
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Nagao, Yukio; and Fukazawa, Chiaki, to Tokyo Shibaura Electric Company, Ltd. Surface inspecting apparatus. 3,797,943, Cl. 356-200.000.

Nagaoka, Shinji: *See—*
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Nagata, Wataru; Terasawa, Tadao; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Phenanthrene derivatives. 3,798,272, Cl. 260-586.00h.

Nagayoshi, Hiromi: *See—*
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Nagy, Ernest J.; Shaver, William R.; and Marsh, Ronald W., to Pullman Incorporated. Trough hatch operating arrangement. 3,797,411, Cl. 105-377.000.

Najmann, Knut: *See—*
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Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, to Kabushiki Kaisha Takenaka Komuten. Composition for plugging formations having pores in constructive works. 3,798,186, Cl. 260-2.50a.

Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; and Wakimasu, Mitsuhiro, to Takeda Chemical Industries, Ltd. Aspartyl-(O-alkyl)-serine methyl ester sweeteners. 3,798,204, Cl. 260-112.500.

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Nakanishi, Toru; Matsui, Junichi; Yonehara, Setsuji; Aoki, Masahiro; Ishiguro, Kiyonori; Satake, Tatsuo; and Azuma, Shingi, to Toray Industries, Inc. and Toray Engineering Co., Ltd. Apparatus for separating fine oil droplets and sluge suspended in liquid. ,797,666, Cl. 210-265.000.

Nakatani, Hiromi: *See—*
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Nakayama, Shozo; Kurahashi, Masayuki; and Hattori, Mitsuhiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotary vane-type gas-compressor. 3,797,972, Cl. 418-85.000.

Nambu, Shyuya, to Nissan Motor Company, Limited. Fuel injection internal combustion engine. 3,797,466, Cl. 123-32.0st.

Napier, John M.: *See—*
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Napoli, Louis Sebastian: *See—*
DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, 3,798,575.

Narahara, Hisaaki, to Sony Corporation. Magnetic recording and reproducing system. 3,798,357, Cl. 178-5.4cd.

Narahara, Hisaaki; Numakura, Toshihiko; and Watanabe, Yoshimi, to Sony Corporation. Magnetic recording and/or reproducing system. 3,798,361, Cl. 178-5.4cd.

Narayan, K. Sankara: *See—*
Rounds, Donald E.; and Narayan, K. Sankara, 3,798,131.

Naschwitz, Walter; and Knust, Elisabeth, to Siemens Aktiengesellschaft. Method for the manufacture of latex bonded asbestos cover layers and covers produced. 3,798,197, Cl. 260-41.50a.

Nashua Corp.: *See—*
Leclair, Albert W., 3,798,039.

Naske, Christoph, to WHB-Anbausnobel von Poschinger K.G. Furniture or container unit. 3,797,905, Cl. 312-262.000.

Nasser, Benny E., Jr., to Phillips Petroleum Company. Polyolefin production. 3,798,202, Cl. 260-88.20r.

Natens, Luc Yves: *See—*
Staes, Karel Germanus; and Natens, Luc Yves, 3,797,941.

Nath, Dilip K.; and Wolk, John R., to General Electric Company. Product and process for europium-activated rare earth phosphor. 3,798,173, Cl. 252-301.40f.

National Cash Register Company, The: *See—*
Gilberg, Robert C.; Donohue, James P.; and Patel, Ramesh S., 3,798,421.
Sekel, John, 3,797,342.

National Research Development Corporation: *See—*
Bain, Donald Cyril, 3,797,527.
King, Raymond John, 3,797,940.
O'Dell, Thomas Henry, 3,798,622.

Naumann, Peter; and Muller, Hans, to Dragerwerk Aktiengesellschaft. Apparatus and method for discerning an indicator reaction point. 3,798,001, Cl. 23-232.00r.
Navin, William R.: *See—*
Gray, Robert J.; and Navin, William R., 3,797,746.
Neal, Robert D. Apparatus for cleaning large rings. 3,797,058, Cl. 15-21.00d.
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer: *See—*
Hamer, Herbert Emile Den, 3,797,875.
Nederlof, Dirk: *See—*
Hulsbosch, Cornelis Jozef; and Nederlof, Dirk, 3,798,601.
Neely, Joseph E.; and Brown, Sidney F., to Kaiser Aluminum & Chemical Corporation. Refractory shape with prereacted grain. 3,798,042, Cl. 106-59.000.
Neetomori, Eva Laszio: *See—*
Toth-Sarudy, Eva; Horvath, Istvan; Gyimesi, Jozsef; Ott, Istvan; Alfoldi, Laszlo; Berdy, Janos; Koczka, Istvan; Scholtz, Vilma; Szell, Valeria; and Neetomori, Eva Laszio, 3,798,129.
Nehr, Charles W., to Rockwell International Corporation. Brake. 3,797,613, Cl. 188-79.5ge.
Neil, Peter C., to Standard Oil Company. Material handling system for plastic film. 3,797,761, Cl. 241-34.000.
Nelson, Gary L.: *See—*
Friend, Aaron D.; Nelson, Gary L.; and Yoder, Royce A., 3,798,520.
Nelson, John; and Schultz, Robert J., to Emhart Corporation. Container twisting structure for rinser or the like. 3,797,641, Cl. 193-43.00a.
Nelson, Paul A.; and Kumar, Romesh, to United States of America, Atomic Energy Commission. Method of measuring the tritium concentration in a high-temperature environment. 3,797,299, Cl. 73-19.000.
Nelson, Rolland W. Preservative and nitrate reducing agent for raw agricultural crops. 3,798,321, Cl. 424-128.000.
Nennen, John Joseph, to Deere & Company. Forage hervester cutterhead. 3,797,766, Cl. 241-282.200.
Neuco Apparatebau AG: *See—*
Schnyder, Conrad W., 3,797,902.
Neugebauer, Jeno: *See—*
Baktai, Gyorgy; Saly, Sandor; Orlik, Benedek; and Neugebauer, Jeno, 3,798,008.
Neulander, Charles K.; and Ward, William J., III, to General Electric Company. Microporous/non-porous composite membranes. 3,797,202, Cl. 55-158.000.
Neumann, Leopold: *See—*
Gordon, Bernard M.; and Neumann, Leopold, 3,798,636.
Newmont Exploration Limited: *See—*
Lapat, Philip E.; and Hellyer, Walter C., 3,798,306.
Newton, Alwin B., to Borg-Warner Corporation. Air conditioning control system. 3,797,266, Cl. 62-223.000.
NGK Insulators, Ltd.: *See—*
Tsuzuki, Kaoru; and Kozaka, Setsuo, 3,798,351.
Ngo, Peter Dinh-Tuan, to Bell Telephone Laboratories, Incorporated. Planar gas discharge shift register. 3,798,502, Cl. 315-169.0tv.
Nickel, Elmar: *See—*
Letzel, Karl; Stober, Helmut; and Nickel, Elmar, 3,797,605.
Nicklin, Thomas, to Gas council, The. Treatment of gases. 3,798,315, Cl. 423-574.000.
Nicol & Andrew Limited: *See—*
McCracken, Alexander Ernest, 3,798,442.
Nicolaus, Frank G.; and Breitenstein, Charles T., to Spiral Step Tool Company. Spiral and radial relief grinding fixtures with coaxial planetary differential drive. 3,797,175, Cl. 51-95.01h.
Nicollet, Michel. Automatic device for subaqueous massage. 3,797,482, Cl. 128-66.000.
Nielsen, Helmer Trost, to Danfoss A/S. Sealing means for valve stem. 3,797,805, Cl. 251-214.000.
Niethammer, Dieter: *See—*
Ollinger, Max; Markwitz, Wernhard; Niethammer, Dieter; and Kvale, Oddvar, 3,798,549.
Nievelt, Frank J., to Zelda Nievelt, mesne. Roof vent pipe shield. 3,797,181, Cl. 52-105.000.
Nilsson, Maths S. I., to Nilssons Industrieballage AG. Method of providing metal mountings or the like on members of wood or similar material. 3,797,096, Cl. 29-429.000.
Nilssons Industrieballage AG: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
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Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Shimizu, Mineo; Takechi, Hiroshi; Suemune, Kenichiro; Nagao, Setsuo; and Ohta, Kuniteru, 3,798,076.
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Nippondensco Co. Ltd.: *See—*
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Nitzsche, Siegfried; Bauer, Ignaz; Graf, Werner; and Zeller, Norbert, to Wacker-Chemie G.m.b.H. Process for the addition of silicon compounds with si-bonded hydrogen to compounds with aliphatic multiple bonds. 3,798,252, Cl. 260-448.20e.
Nixdorff Krien Mfg.: *See—*
Ruppe, Robert C.; and Woltzen, Herschel E., 3,797,229.
Nixon, Larry R., to Aeroquip Corporation. Latch and V band coupler. 3,797,079, Cl. 24-285.000.
NJM, Inc.: *See—*
Wolff, Edwin K., 3,797,389.
NL Industries, Inc.: *See—*
Peterson, Reuben W.; and Backus, Harold A., 3,797,860.
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Noel y Compania Limitada Sociedad Anoniam Argentian de Dulces y Conservas: *See—*
Abalo, Juan Manuel, 3,798,337.
Nohejl, Antonin, to Mollart Engineering Company Limited, The. Tools carring heads, more particularly for transfer machines. 3,797,363, Cl. 90-26.00r.
Nohira, Hidetaka: *See—*
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Noranda Mines, Limited: *See—*
English, Christopher John, 3,797,555.
Gervais, Edouard; and Chollet, Pierre, 3,798,028.
Nordgren, Hans Elov; and Klockarns, Per. Method for making corner or edge plates for cases, packing, containers or other receptacles and a plant for carrying through the method. 3,797,428, Cl. 113-1.00r.
Nordson Corporation: *See—*
Hogstrom, Edwin F., 3,797,456.
Norman, Peter, to International Standard Electric Corporation. Multilevel PCM system enabling AGC control of a transmitted multilevel signal in any selected frequency portion of said transmitted signal. 3,798,544, Cl. 325-38.00a.
Norman, Sivert; Flystrom, Ernst; and Johansson, Folre, to Allmanna Svenska Elektriska Aktiebolaget. Operating mechanism for tap changer switches. 3,798,395, Cl. 200-17.00r.
Norris, Philip: *See—*
Land, Edwin H.; and Norris, Philip, 3,797,915.
North American Rockwell Corporation: *See—*
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Norton Company: *See—*
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Norton, David Edward, to Norton, James Farmer, Sir, & Co., Limited. Apparatus for treating webs. 3,797,281, Cl. 68-19.100.
Norton, James Farmer, Sir, & Co., Limited: *See—*
Norton, David Edward, 3,797,281.
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Dibrell, James W., 3,797,696.
Notarys, Harris A.; and Mercereau, James E., to California Institute of Technology. Multilayered thin film superconductive device, and method of making same. 3,798,511, Cl. 317-234.00r.
Novak, William P.: *See—*
Menefee, Julius H.; Novak, William P.; and White, John A., 3,798,448.
Noyes, Richard C., to United States of America, Atomic Energy Commission. Fuel subassembly for nuclear reactor. 3,798,124, Cl. 176-76.000.
Nozawa, Takamitsu; and Kishi, Takao, to Yoshino Kogyosho Co., Ltd. Liquid spraying device. 3,797,748, Cl. 239-321.000.
NPI Corporation, mesne: *See—*
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O'Brien, Julia R.; and O'Brien, Gary F. Show-tote bale bag. 3,797,650, Cl. 206-83.500.
Ocean Portein Corporation: *See—*
Day, John J.; and Hirschman, Paul S., 3,797,458.
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Offenhauer, Charles Martin: *See—*
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Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.): *See—*
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Ogawa, Yasumasa; and Nimiyama, Seigo, to Dantani Sangyo Kabushiki Kaisha. Panel having embossed printing pattern. 3,798,098, Cl. 156-154.000.
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Ohtsuka, Motoo, to Kabushiki Kaisha Kumagaigumi. Method for installing a drain material in a water-containing poor subsoil. 3,797,252, Cl. 61-11.000.
Okamoto, Kiyokazu; and Tamagawa, Hitoshi, to Nippon Electric Company, Limited. Digital servo comprising means for controlling driving energy in response to droop. 3,798,524, Cl. 318-571.000.
Okaya Denki Sangyo Kabushiki Kaisha: *See—*
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Okinaka, Yutaka; and Sard, Richard, to Bell Telephone Laboratories, Incorporated. Electroless plating process. 3,798,056, Cl. 117-113.000.
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Olsen, Judith D.; and Romankiw, Lubomyr T., to International Business Machines Corporation. Method for completely filling small diameter through-holes with large length to diameter ratio. 3,798,136, Cl. 204-15.000.
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Omori, Kunihide; and Nagayoshi, Hiromi, to Toyo Bearing Manufacturing Company Limited. Metal clamp band. 3,797,077, Cl. 24-273.000.
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Onder, Harald, to Swiss Aluminium Ltd. Device for hot pressing of ceramic material. 3,797,986, Cl. 425-352.000.
Ono, Minoru, to Hitachi, Ltd. Semiconductor device having a surface parallel to the [100] plane and a channel stopper parallel to the [111] plane. 3,798,513, Cl. 317-235.00r.
Ooya, Junichiro; Takayama, Katsuki; and Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Method for detecting mutual higher and lower revolutional speeds of a plurality among rotating members. 3,798,556, Cl. 328-133.000.
Opittek, Eugene W.: *See—*
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Oshida, Yoshitada, to Hitachi, Ltd. Holography memory apparatus using a single quarter-wave spacial modulator. 3,798,618, Cl. 340-173.01m.
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Pagnozzi, L. Rita; Patton, James C., Jr.; and Mac Innis, Martin B., to GTE Sylvania Incorporated. Recovering rhenium values from organic extractant solutions. 3,798,305, Cl. 423-49.000.

Palm, Ernst, to Bodenseewerk Perkin-Elmer Co., G.m.b.H. Method and apparatus for collecting and introducing a sample into an analytical instrument. 3,797,318, Cl. 73-422.0gc.

Palmer Concrete Products, Inc.: *See—*
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Palmer, Robert C., to Atlantic Richfield Company. Lubricant composition for inhibiting valve recession. 3,798,163, Cl. 252-33.400.

Pape, Heinz; and Reinmold, Heinz-Josef, to Saint-Gobain Industries. Apparatus for cutting glass. 3,797,339, Cl. 83-12.000.

Paquette, James P., to Berlyn Corporation, The. Screen changer. 3,797,665, Cl. 210-236.000.

Paradis, Maurice E.: *See—*
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Paramonoff, Elpidifor, to Standun, Inc. Safety lock for safety equipment such as hoods for can making machinery. 3,797,293, Cl. 72-26.000.

Paramount Textile Machinery Co.: *See—*
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Parekh, Girish Girdhar; and Blank, Werner Josef, to American Cyanamid Company. Process for preparing a electrocoating composition. 3,798,193, Cl. 260-29.4ua.

Parera, Pedro Pere. Machine for drying and ironing fabrics. 3,797,141, Cl. 38-11.000.

Parham, Thomas Moylan, Jr.; and Sansing, James Earl, Jr., to Allied Chemical Corporation. Process for incorporating micronutrients in liquid phosphatic fertilizers. 3,798,020, Cl. 71-1.000.

Paridon, Leo J.; Dye, Cloyde G.; and Yarsa, Frank J., to PPG Industries, Inc. Glass manufacture. 3,798,018, Cl. 65-134.000.

Parish, Roger C.; and Trei, John E., to Smithkline Corporation. Methods and compositions for improving feed efficiency of uminants using polypentaerythritol haloacetaldehyde hemiacetals. 3,798,330, Cl. 424-342.000.

Parker, Rollin James, to General Electric Company. Movable magnet loudspeaker. 3,798,391, Cl. 179-114.00r.

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Parkes, Ralph C. Drum dryer. 3,797,126, Cl. 34-114.000.

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Pars, Harry George: *See—*
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Parsens, Ralph M., Company, The: *See—*
Beavon, David K., 3,798,316.

Pasadena Foundation for Medical Research: *See—*
Rounds, Donald E.; and Narayan, K. Sankara, 3,798,131.

Patchett, Arthur A.; Mrozik, Helmut; and Hoff, Dale B., to Merck & Co., Inc. Salicylanilides. 3,798,258, Cl. 260-479.00r.

Patel, Ramesh S.: *See—*
Gilberg, Robert C.; Donohue, James P.; and Patel, Ramesh S., 3,798,421.

Patterson, Norman P.; and Perkins, David J., to Chrysler Corporation. Suspension system. 3,797,852, Cl. 280-124.00a.

Patton, James C., Jr.: *See—*
Pagnozzi, L. Rita; Patton, James C., Jr.; and Mac Innis, Martin B., 3,798,305.

Paul, Eugene F.: *See—*
Wightman, Lawrence W.; and Paul, Eugene F., 3,797,297.

Paul, Maynard C.: *See—*
Kaske, Alan D.; Paul, Maynard C.; and Tolman, Charles H., 3,798,623.

Paul, Richard S.; and Weiler, David W., to Union Carbide Corporation. Rotary heat exchanger and apparatus. 3,797,559, Cl. 165-1.000.

Paulson, Robert C. Gas relieving device for bottles. 3,797,112, Cl. 30-366.000.

Peabody Gordon-Piatt, Inc.: *See—*
Gordon, Merrill K., 3,797,989.

Peacock, Bobbie D. Package attachment for containers. 3,797,658, Cl. 206-484.000.

Peddinghaus, Werner: *See—*
Peddinghaus, Werner; and Regnebrecht, Ludwig (said Regnebrecht assor. to said), 3,797,955.

Peddinghaus, Werner; and Regnebrecht, Ludwig, said Regnebrecht assor. to said Peddinghaus, Werner. Boring and punching device. 3,797,955, Cl. 408-20.000.

Peets, Robert S., to Singer Company, The. Sewing machine cabinet. 3,797,425, Cl. 112-217.100.

Penberthy, Harvey Larry. Safety helmet. 3,797,039, Cl. 2-3.00r.

Penna, Vincent Della, Jr.: *See—*
Dean, Harold L.; and Penna, Vincent Della, Jr., 3,797,386.

Pentz, Howard L.; Parkhani, Chandrakant; and Majeron, Frank, to FMC Corporation. Sludge removal apparatus. 3,797,664, Cl. 210-83.000.

Penyak, Joseph J., to Boeing Company, The. Method of sealing the tip end of a helicopter rotor blade spar. 3,798,102, Cl. 156-214.000.

Pereberg, William: *See—*
Clark, Charles W.; and Pereberg, William, 3,797,742.

Pereman, Gordon F., to PPG Industries, Inc. Glass cutting device. 3,797,340, Cl. 83-12.000.

Pereyron, Albert: *See—*
Guth, Jean-Louis; Pereyron, Albert; and Wey, Raymond, 3,798,311.

Perkin-Elmer Corporation, The: *See—*
Scott, Larkin B.; and Roth, George, 3,798,557.

Perkins, David J.: *See—*
Patterson, Norman P.; and Perkins, David J., 3,797,852.

Perkins, Garry R.; and Goode, James K., Jr., to Spotnails, Inc. Fastener-drive tool. 3,797,723, Cl. 227-109.000.

Person, Junius W. Quick connect ceiling electrical fixture mounting. 3,798,584, Cl. 339-14.00r.

Persoons, Gustaaf M.: *See—*
Dentant, Willy G. A.; and Persoons, Gustaaf M., 3,797,503.

Persson, Bo-Goran: *See—*
Lampe, Wolfgang; Spicar, Erich; and Persson, Bo-Goran, 3,797,314.

Peter, John W.: *See—*
Ma, Carlton Y. W.; and Peter, John W., 3,797,808.

Petering, Wilbur H.; Kircher, Charles E., Jr.; and Pinchak, Paul R., to Detrex Chemical Industries, Inc. Stabilized methylchloroform compositions. 3,798,170, Cl. 252-162.000.

Peters, Ernest: *See—*
Milner, Edward Francis Godfrey; Peters, Ernest; Swinkels, Godefridus Maria; and Vizsolyi, Andrew Imre, 3,798,026.

Peters, Leo. Method for embossment packaging of warm butter. 3,798,335, Cl. 426-130.000.

Petersen, Niel R.; and Petersen, Paul S., to MTS Systems Corporation. Tire compliance test machine. 3,797,306, Cl. 73-146.000.

Petersen, Paul S.: *See—*
Petersen, Niel R.; and Petersen, Paul S., 3,797,306.

Peterson, Bertil E., to Cardwell Westinghouse Company. Method for removing draft gear. 3,797,097, Cl. 29-427.000.

Peterson, Carl G.; and Aijala, Sulo A., to Peterson, Carl G., Co. Clutch and brake assembly. 3,797,618, Cl. 192-21.0ba.

Peterson, Carl G., Co.: *See—*
Peterson, Carl G.; and Aijala, Sulo A., 3,797,618.

Peterson, Charles D., Jr. Split valve test plug. 3,797,317, Cl. 73-420.000.

Peterson, Reuben W.; and Backus, Harold A., to NL Industries, Inc. Mobile carrier for a radioactive material shipping container. 3,797,860, Cl. 280-179.00r.

Petrarca, Carmen A.: *See—*
Bress, Dellason F.; and Petrarca, Carmen A., 3,798,021.

Petrillo, Richard J., to Gillette Company, The. Package. 3,797,657, Cl. 206-356.000.

Petros, Andrew J., to Mesta Machine Company. Keeper for retaining a pin or shaft. 3,797,949, Cl. 403-355.000.

Petrucci, Pasquale M.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,797,145.

Pettee, George H.; and Blake, Edward R., to Norton Company. Work holding, positioning, and feeding mechanism. 3,797,173, Cl. 51-3.000.

Pettersen, Aage: *See—*
Schulkind, Herbert; and Pettersen, Aage, 3,798,431.

Petzold, Wolfgang. Device for conducting current to a rotating electroplating barrel. 3,798,148, Cl. 204-213.000.

Pevic, William V. Tow bar. 3,797,846, Cl. 280-24.000.

Pezaris, Constantine D.; Tegan, William P.; and Trame, Paul J., to Thermo Electron Corporation. Automatic vapor engine start-up. 3,797,249, Cl. 60-646.000.

Pezzaglia, Paolo, to Carrozzeria Boneschi Srl. Extendable vehicle body. 3,797,880, Cl. 296-26.000.

Pfleiderer, Wolfgang, to Ciba-Geigy Corporation. Glycosidylpteridines. 3,798,210, Cl. 260-211.50r.

Phillips, Brian Harry; and Carrington, Peter, to General Electric Company, Limited, The. Access circuit for a time-shared data processing equipment. 3,798,591, Cl. 340-172.500.

Phillips Petroleum Company: *See—*
Childs, William V., 3,798,144.
Jones, Faber B., 3,798,118.
Kenton, Joseph R., 3,798,192.
Nasser, Benny E., Jr., 3,798,202.
Wu, Yulin, 3,798,257.

Phillips, Wendell Gary, to Monsanto Company. Substituted S-dichloromethyl organothiosulfonates and their manufacture. 3,798,254, Cl. 260-453.00r.

Physikalisch-Technisches Entwicklungsburo-Laing: *See—*
Laing, Nikolaus; and Ludin, Ludwig, 3,797,270.

Physio Medics, Inc.: *See—*
Loiacono, Vincent R., 3,797,496.

Piacente, Luigi; and Gandolfi, Giovanni, to Societa' Italiana Telecomunicazioni S.p.A. Inhibiting trunk calls from private branch exchanges. 3,798,381, Cl. 179-18.0da.

Piasek, Edmund J.; and Karll, Robert E., to Standard Oil Company. Lubricating oils containing high molecular weight mannich condensation products. 3,798,165, Cl. 252-51.50r.

Piasek, Edmund J.; and Karll, Robert E., to Standard Oil Company. Oil soluble aliphatic acid derivatives of molecular weight Mannich condensation products. 3,798,247, Cl. 260-404.500.

Pielkenrood, Jacob; Ambrosius, Willen Lee Bernard; and Kooistra, Willen, to Pielkenrood-Vinitex N.V. Separation device. 3,797,668, Cl. 210-522.000.

Pielkenrood-Vinitex N.V.: *See—*
Pielkenrood, Jacob; Ambrosius, Willen Lee Bernard; and Kooistra, Willen, 3,797,668.

Pilipovich, Donald; and Lindahl, Charles B., to United States of America, Navy. Process for preparation of chlorine nitrate. 3,798,312, Cl. 423-386.000.

Pillet, Jean, to Rhone-Poulenc S.A. Artificial tendon. 3,797,047, Cl. 3-1.000.

Pillsbury Company, The: *See—*
Galle, Edward L., 3,798,338.

Pinchak, Paul R.: *See—*
Petering, Wilbur H.; Kircher, Charles E., Jr.; and Pinchak, Paul R., 3,798,170.

Pinto, Peter J.; Kind, Donald M.; and McCarthy, Roy B., to Leslie Salt Co. High-speed liquid dispenser. 3,797,536, Cl. 141-134.000.

Pioneer Electronic Corporation: *See—*
Takahashi, Yoshio; Abe, Kunio; and Igata, Toyonori, 3,797,834.
Takaoka, Saburo, 3,798,550.

Pirouette Projects, Inc.: *See—*
Harkness, Rebekah, 3,797,137.

Pisecker, Hans; and Schicht, Werner, to Brown Boveri & Company Limited. Arrangement for exciting an asynchronous start synchronous motor. 3,798,522, Cl. 318-174.000.

Pitney-Bowes, Inc.: *See—*
Harbison, Charles H., 3,797,196.
Miciukiewicx, Joseph P.; Morrison, Douglas I.; Pollak, Phikip, Jr.; and Ross, William A., 3,797,347.

Place, Virgil A., to Alza Corporation. Device for dispensing product with directional guidance member. 3,797,492, Cl. 128-260.000.

Plant, Roland. Pack frame having pulley adjusting straps. 3,797,718, Cl. 224-25.00a.

Platz, Winfried; and Ludke, Heinz, to Siemens Aktiengesellschaft. Supporting table for patients. 3,797,819, Cl. 269-322.000.

Pleshivisev, Nikolai Vasilievich; Semashko, Nikolai Nikolaevich; and Chukhin, Ivan Alexandrovich. Plasma source of charged particles. 3,798,488, Cl. 313-231.000.

Plessey Handel und Investments A.G.: *See—*
Dobson, Patrick Francis; and Wyman, David Alfred, 3,798,432.

Plummer, William T., to Polaroid Corporation. Azygous ophthalmic lens and spectacles for correcting presbyopia. 3,797,922, Cl. 351-169.000.

Podschus, Gerhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of 1-amino-2,5-dialkoxy-4-chlorobenzenes. 3,798,271, Cl. 260-575.000.

Polaroid Corporation: *See—*
Bachelder, Albert J., 3,798,669.
Brandt, Edison R., 3,797,152.
Downey, Rogers B., 3,797,778.
Eloranta, Vaito K.; and Walworth, Vivian K., 3,798,665.
Land, Edwin H.; and Norris, Philip, 3,797,915.
Land, Edwin H.; and Bachelder, Albert J., 3,798,439.
Plummer, William T., 3,797,922.

Pollak, Phikip, Jr.: *See—*
Miciukiewicx, Joseph P.; Morrison, Douglas I.; Pollak, Phikip, Jr.; and Ross, William A., 3,797,347.

Pollak, Philip, Jr.: *See—*
Miciukiewicz, Joseph F.; Pollak, Philip, Jr.; Morrison, Douglas I.; and Ross, William A., 3,797,931.

Pollara, Paul, to Thermoplastic Processes, Incorporated. Fluorescent lamp heat shield. 3,798,481, Cl. 313-110.000.

Pollet, Robert Joseph: *See—*
Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Pollet, Robert Joseph; Sneyers, Hendrik Hubert; and Dierckx, Jozef Aime, 3,798,031.

Poloroid Corporation: *See—*
Land, Edwin H., 3,798,667.

Polovina, Walter, to AB Carl Munters. Impregnated fibrous web structures. 3,798,057, Cl. 117-126.0ab.

Poma 2.000 S.A.: *See—*
Laurent, Roger, 3,797,407.

Pomagalski S.A.: *See—*
Virdis, Joseph, 3,797,608.

Pommerening, Karl Werner; and Salewski, Rainer, to Rheinstahl AG. Roadway transition for expansion joints on road bridges etc. 3,797,952, Cl. 404-52.000.

Pontois, Serge: *See—*
Le Cardonnel, Gerard Marcel; Sandre, Jacques Victor; and Pontois, Serge, 3,798,469.

Poole, Donald R.; Stang, Peter L.; Mars, James E.; and Williams, Duane A., to Rocket Research Corporation. Crash restaint air generating inflation system. 3,797,854, Cl. 280-150.0ab.

Porcelli, John C.; and Ostrowsky, Efrem M., to Federal Tool & Plastics; a division of VCA Corporation. Safety cap unit. 3,797,688, Cl. 215-9.000.

Porret, Daniel: *See—*
Batzer, Hans; Habermeier, Joerger; and Porret, Daniel, 3,798,242.

Porter, Charles: *See—*
Rogers, Jack M.; Porter, Charles; and Matesevac, Ronald A., 3,797,990.

Porter, James D., to Jankelson, Bernard, Dr. Mandible stimulator. 3,797,500, Cl. 128-422.000.

Post Office, The: *See—*
Clarke, Eric Fifield Stuart, 3,798,350.
Harding, John Patrick; Butler David Sydney; and Lee, Frank James, 3,798,347.

Pole, William T. Flexible coaxial cable and method of making same. 3,797,104, Cl. 29-593.000.

Potencsik, Istvan: *See—*
Cherdron, Egon; Haerter, Manfred; Fassle, Fritz; Forster, Hans-Joachim; and Potencsik, Istvan, 3,797,758.

Powell, Johnnie L.; and Doyle, Carl L., to Mandrel Industries, Inc. Conveyor guide. 3,797,624, Cl. 193-25.00r.

Power Electronics International, Inc.: *See—*
Habisohn, Victor J., 3,798,519.

PPG Industries, Inc.: *See—*
Franz, Helmut; and Crissman, Roy G., 3,798,050.
Hay, William J., Jr., 3,798,112.
Paridon, Leo J.; Dye, Cloyde G.; and Yarsa, Frank J., 3,798,018.
Pereman, Gordon F., 3,797,340.

Prasse, Herbert F.; McCormick, Harold E.; and Ott, William F., to Ramsey Corporation. Slipper type apex seal for rotary piston engine. 3,797,973, Cl. 418-118.000.

Pratt, John Harry, to RCA Corporation. Automatic frequency control for pulse radar and communication systems. 3,798,552, Cl. 325-420.000.

Pressure Science, Inc.: *See—*
Halling, Horace P., 3,797,836.

Prestige Furniture Corporation: *See—*
Harman, Edward W.; and Leatherman, Marvin R., 3,797,885.

Preti, Jean, to Societe de Fabrication d'Instruments de Mesure S.F.I.A. Process and system for the indentification of a vehicle. 3,798,641, Cl. 343-6.5ss.

Priaroggia, Paolo Gazzana; and Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Oil filled electric submarine cable with oil duct restrictors. 3,798,345, Cl. 174-14.00r.

Price, Raymond R., to Rochester Silo, Inc. Silo chute with separate discharge tube. 3,797,625, Cl. 193-34.000.

Price, Robert L.: *See—*
Webb, William L.; Warwick, Thomas R.; Hackey, Ronald D.; and Price, Robert L., 3,797,233.

Pricer, Wilbur D.: *See—*
Henle, Robert A.; Maley, Gerald A.; and Pricer, Wilbur D., 3,798,606.

Princeton Electronic Products, Inc.: *See—*
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Printing Plate Supply Company: *See—*
Hynes, James A., 3,798,134.

Pritsch, Eckhard: *See—*
Kreissl, Ottmar; and Pritsch, Eckhard, 3,798,504.

Procter & Gamble Company, The: *See—*
Hellyer, James A., 3,798,179.

Produits Chimiques Pechiney-Saint-Gobain: *See—*
Meiller, Francois, 3,798,251.

Propst, Robert L. Timber harvesting machine. 3,797,540, Cl. 144-3.00d.

Pryor, Timothy R. Diffractographic measurement of profile. 3,797,939, Cl. 356-111.000.

Psencik, Ernest L., to Rangaire Corporation. Lighting fixture hanging assembly. 3,797,791, Cl. 248-228.000.

Pullman Incorporated: *See—*
Nagy, Ernest J.; Shaver, William R.; and Marsh, Ronald W., 3,797,411.

Pung, Bruce D.: *See—*
Bliss, Burit E.; Dervan, James T., III; Griffith, Leroy E.; Pung, Bruce D.; Thorpe, Robert A.; and Vogel, Norman A., 3,798,610.

Purolator, Inc.: *See—*
Torres, Jorge; and Lane, George W., 3,797,510.

Pursel, Oden A. Combination mowing-mulching apparatus. 3,797,212, Cl. 56-255.000.

Putman, Richard E., to Westinghouse Electric Corporation. Computer control system for refining and hydrogenation of unsaturated hydrocarbons. 3,798,002, Cl. 23-253.00a.

Pylaikin, Petr Alexeevich: *See—*
Vasilkovsky, Vitaly Pankratievich; Grebnev, Nikolai Feodosovich; Efimov, Leonid Alexandrovich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andreevich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andrevich; Pylaikin, Petr Alexeevich; Rozanov,

Boris Vasilievich; Sinitsky, Vladimir Mikhailovich; and Khirdzhiev, Sergei Grigorievich, 3,797,298.

Quackenbush, Arthur B.: *See*—
Quackenbush, Robert C., 3,797,583.

Quackenbush, Robert C., 50% interest to Quackenbush, Arthur B. Positive feeding structure for tools incorporating pressure controlled feed member. 3,797,583, Cl. 173-4.000.

Quadall Company, Inc.: *See*—
Woolsey, Nils S.; and Van Blair, Wade, 3,797,443.

Quirk, John Andrew, to Atkinson's of Clitheroe Limited. Safety guards. 3,797,328, Cl. 74-609.000.

Quirk, John Andrew, to Atkinson's of Clitheroe Limited. Safety guards. 3,797,329, Cl. 74-609.000.

Raab, Andrew F. Safety switch and control system for vehicles. 3,798,402, Cl. 200-161.000.

Radoff, Steven: *See*—
Varadi, Andrew G.; Rubinstein, Richard B.; and Radoff, Steven, 3,798,617.

Radtke, Joseph D.: *See*—
Struger, Ido J.; and Radtke, Joseph D., 3,798,612.

Radutsky, Grigory Avramovich: *See*—
Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Goltsman, Samuil Aronovich; Oleinik, Alexandr Ivanovich; and Frumkin, Mikhail Evseevich, 3,797,677.

Ralston Purina Company: *See*—
Hawley, Robert Lyle, 3,798,336.

Ramachandran, Sundaresan; and Fulton, James C., to Allegheny Ludlum Industries, Inc. Vacuum decarburization in RH and DH type degassing systems. 3,798,025, Cl. 75-49.000.

Rambacher, Paul; and Make, Siegfried. Process for making DL-S-benzyl-N-acetyl cysteine. 3,798,263, Cl. 260-516.000.

Ramey, Robert M., to Teledyne, Inc. Convertible gas heating apparatus. 3,797,477, Cl. 126-307.000.

Ramsey Corporation: *See*—
Prasse, Herbert F.; McCormick, Harold E.; and Ott, William F., 3,797,973.

Randall, Edward L. Extractor assembly. 3,798,133, Cl. 203-99.000.

Randell, Forrest Thomson, to Weir Pumps, Limited. Control system. 3,797,966, Cl. 417-13.000.

Randle, Fred W., to International Paper Company. Method and apparatus for folding a cargon blank. 3,797,371, Cl. 93-52.000.

Rands, Larry G.: *See*—
Heard, James L.; Opittek, Eugene W.; and Rands, Larry G., 3,798,425.

Rangaire Corporation: *See*—
Psencik, Ernest L., 3,797,791.

Rank Organisation Limited, The: *See*—
Whitehouse, Joseph Colin, 3,798,517.

Rankin, Carol Dean: *See*—
Lawing, Burmah S.; and Rankin, Carol Dean, 3,797,713.

Ransom, James R.: *See*—
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, 3,798,650.

Rapifax Company, The: *See*—
Frohbach, Hugh F., 3,798,609.

Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, to Becton, Dickinson and Company. Data display system. 3,797,145, Cl. 40-63.00r.

Raschke, Herbert A., to Bullard, E. D., Company. Face shield bracket mount for helmets. 3,797,041, Cl. 2-8.000.

Rassbach, Felix; Buttner, Rolf; and Schuck, Stephan, to Kalle Aktiengesellschaft. Process for improving the shape of a stick of longitudinally shirred artificial sausage casing. 3,798,301, Cl. 264-294.000.

Ratouis, Roger: *See*—
Boissier, Jacques Robert; and Ratouis, Roger, 3,798,216.

Ravilious, Clarence F.: *See*—
Meek, James M.; Ravilious, Clarence F.; and Heinard, Weilden G., 3,798,655.

Ravin, Abe: *See*—
Ravin, Abe; and Schlatter, Gerald L. (said Schlatter assor. to said), 3,797,129.

Ravin, Abe; and Schlatter, Gerald L., said Schlatter assor. to said Ravin, Abe. Heart sounds teaching and display apparatus. 3,797,129, Cl. 35-17.000.

Ravizza S.A.: *See*—
Jommi, Giancarlo; Mauri, Francesco; and Riva, Giovanna, 3,798,212.

Ravotto, Martin H.: *See*—
Marhefka, Andrew J.; and Ravotto, Martin H., 3,797,360.

Raynaud, Guy M.: *See*—
Fauran, Claude P.; Douzon, Colette; Huguet, Gerard J.; Raynaud, Guy M.; and Bailly, Yves A., 3,798,218.

Raytheon Company: *See*—
Hergenrother, Rudolf C.; and Lotus, John W., 3,798,495.

Razdan, Raj Kumar: *See*—
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,798,326.

RCA Corporation: *See*—
Astle, Brian; and Guiot, Jean Marie, 3,798,059.
Cosentino, Louis Salvatore, 3,798,620.
DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, 3,798,575.
Hernquist, Karl Gerhard, 3,798,486.
Limberg, Allen Leroy, 3,798,376.
Pratt, John Harry, 3,798,552.
Weisbecker, Joseph A., 3,798,615.

Reboul, Jean Philippe, to Thomson-CSF. Gas-discharge display panels. 3,798,482, Cl. 313-188.000.

Reckard, Ronald M.; and Morse, Raymond I., to General Electric Company. Low voltage surge arrester. 3,798,505, Cl. 317-68.000.

Reczey, Gusztav: *See*—
Kisbocskoi, Laszlo; Kubo, Sandor; and Reczey, Gusztav, 3,798,159.

Redin, Clifton W. Method and machine for topping gear. 3,797,361, Cl. 90-1.400.

Redmer Plastics Inc.: *See*—
Sanelli, Edward T., 3,797,524.

Reed, Frederick P., to United States of America, Army. Reinforced lightweight cartridge. 3,797,396, Cl. 102-43.00r.

Reed, Marion G.; and Jaffe, Joseph, to Chevron Research Company. Novel catalyst support. 3,798,177, Cl. 252-455.00r.

Reed, Wallace D.; and Stoltz, Richard A., to Westinghouse Electric Corporation. Methods for fabricating ceramic circuit boards with conductive through holes. 3,798,060, Cl. 117-212.000.

Reed, William B.; and Bigsby, Floyd W., to Western Roto Thresh Ltd. Pneumatic classifier for rotary threshing machine. 3,797,502, Cl. 130-27.00r.

Reeves, John Vincent, to Chrysler United Kingdom Limited. Trim strips for vehicle door openings. 3,797,857, Cl. 280-150.00b.

Regnebrecht, Ludwig: *See*—
Peddinghaus, Werner; and Regnebrecht, Ludwig, 3,797,955.

Reich, Bernard: *See*—
Erickson, John M.; and Reich, Bernard, 3,798,510.

Reichart, Elwood C.: *See*—
Tempka, John A.; and Reichart, Elwood C., 3,798,555.

Reichert, C., Optische Werke AG: *See*—
Schindl, Klaus P., 3,798,435.

Reid, Donald E., to Hercules Incorporated. Stabilized polyolefins useful as wire insulation in petroleum-jelly filled cables. 3,798,286, Cl. 260-848.000.

Reik, Michael Kurt; and Johnson, Paul Leonard, to Isopad Limited. Electric heating mantles. 3,798,418, Cl. 219-535.000.

Reil, Wilhelm, to Altsladter Verpackungs-Vertriebs-GmbH. Container for liquids with an openable pouring spout. 3,797,726, Cl. 229-17.00r.

Reinbold, George W.; and Hammond, Earl G., to Iowa State University Research Foundations, Inc. Manufacture of salted cheese. 3,798,340, Cl. 426-261.000.

Reinheimer, Gunter; and Leitz, Ludwig. Automatic microscope focussing device. 3,798,449, Cl. 250-201.000.

Reinmold, Heinz-Josef: *See*—
Pape, Heinz; and Reinmold, Heinz-Josef, 3,797,339.

Reinsch, Arnold Otto Winfried. Hair cleaning implement. 3,797,506, Cl. 132-137.000.

Rek, Johannes Henricus Maria: *See*—
Van Buren, Alex Maarten; Cloosterman, Aloysius Bernardus Maria; Rek, Johannes Henricus Maria; and Zock, Hendrik Frits, 3,798,245.

Rembish, Linda: *See*—
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Remington Aluminum Window Corporation: *See*—
Ekstein, Chaim Henry, 3,797,194.

Remshardt, Rolf: *See*—
Baitinger, Utz; Najmann, Knut; and Remshardt, Rolf, 3,798,621.

RENA Buromaschinenfabrik GmbH & Co., Firma: *See*—
Moser, Erich, 3,797,629.

Renfrew, Edgar E.; and Botros, Raouf, to American Aniline Products, Inc. Polyester textile fibers dyed with alpha-aminoanthraquinone dyes. 3,797,995, Cl. 8-39.000.

Renholts, Roy J., to Hygrometrics, Inc. Linear action hygrometer. 3,797,313, Cl. 73-337.000.

Renner, Hermann: *See*—
Barenyi, Bela; and Renner, Hermann, 3,797,601.

Republic Tool & Manufacturing Corporation: *See*—
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Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Monzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich. Piezoelactric transducer memory with non-destructive read out. 4,78,619, Cl. 340-173.200.
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Schuette, Gunter, to Motorola, Inc. Breakerless trigger circuit with variable dwell for ignition systems. 3,797,471, Cl. 123-148.00e.

Schulenberg, John W.: *See—*
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Schultz, Norman E.; and Schwendeman, Robert J., to Motorola, Inc. High capacity paging system employing subaudible tones. 3,798,545, Cl. 325-55.000.

Schultz, Robert J.: *See—*
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Schulze, Eckehart, to Hartmann & Lammle OHG. Follow-up control apparatus. 3,797,364, Cl. 91-35.000.

Schuster, Dieter: *See—*
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Schuster, Nick A., to Schlumberger Technology Corporation. Methods and apparatus for investigating earth formations. 3,798,533, Cl. 324-10.000.

Schuster, Nick A., to Schlumberger Technology Corporation. Methods and apparatus for investigating earth formations. 3,798,534, Cl. 324-10.000.

Schuster, Nick A., to Schlumberger Technology Corporation. Methods and apparatus for investigating earth formations. 3,798,535, Cl. 324-10.000.

Schuster, Stanley E.: *See—*
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Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of PN junction device. 3,798,082, Cl. 148-188.000.

Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Electrolytic oxidation of gallium containing compound semiconductors. 3,798,139, Cl. 204-56.00r.

Schwartz, Frederic W., to Cable Electric Products, Inc. Electrical flashing device. 3,798,582, Cl. 337-92.000.

Schwartzman, Everett H. Compound Brayton-cycle engine. 3,797,247, Cl. 60-624.000.

Schwarz, Theodor, to Kraftwerke Union Aktiengesellschaft. Gas turbine system with subterranean air storage. 3,797,234, Cl. 60-39.18c.

Schwarze, Werner: *See—*
Rocktaschel, Gottfried; Thurn, Friedrich; Fleischhauer, Horst; Schwarze, Werner; and Westlinning, Hermann, 3,798,196.

Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, to Krauss-Maffei Aktiengesellschaft. Power electromagnetic suspension and guide system for vehicles. 3,797,403, Cl. 104-148.0ms.

Schweicher, Wolfgang: *See—*
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McMillian, Lonnie S.; and Frohwein, George E., 3,798,625.

Scialdone, Sebastian R. Holster and harness. 3,797,715, Cl. 224-2.00b.

Sciortino, August M.: *See—*
Sciortino, August M.; and Rissmann, Charles R. (said Russmann, assor. to), 3,797,735.

Sciortino, August M.; and Rissmann, Charles R., said Russmann, assor. to Sciortino, August M. Locking cover for coin box. 3,797,735, Cl. 232-16.000.

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Scott & Fetzer Company, The: *See—*
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Scott, Larkin B.; and Roth, George, to Perkin-Elmer Corporation, The. Interpolation of sinusoidal signals. 3,798,557, Cl. 328-133.000.

Scott Paper Company: *See—*
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Sebilleau, Roger V.; and Eklund, Kurt I. Collapsible structure for a shelving arrangement. 3,797,671, Cl. 211-176.000.

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Seckerson, Michael Alexander: *See—*
Barnett, Barry Roger Michael; and Seckerson, Clifford Alexander, 3,797,548.

Seckerson, Teresa Agnes: *See—*
Barnett, Barry Roger Michael; and Seckerson, Clifford Alexander, 3,797,548.

Secola, Anthony J., to Chrysler Corporation. Bearing assembly. 3,797,900, Cl. 308-236.000.

See, Robert B.; deceased (Baird, Raymond C., Jr.), See, Dorothy K.,administratrix of said See, Robert B.; deceased, and said Baird asso. to Alfred, Barbara R. (See): trustee. Ventable sealed container. 3,797,694, Cl. 220-44.00r.

Seecamp, Louis W., to Mossberg, O. F., & Sons, Inc. Sear-disconnector for lever-action firearms. 3,797,154, Cl. 42-69.00b.

Seewer AG, Maschinenfabrik: *See—*
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Segre, Joseph P., to American Optical Corporation. Slab laser system with means to overcome the positive lens effect caused by the thermal gradiant in the laser rod. 3,798,571, Cl. 331-94.50t.
Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Phase modulator using a frequency mixing process. 3,798,573, Cl. 332-16.00r.
Seidel, William Carl: *See*—
King, Charles Morgan; Seidel, William Carl; and Tolman, Chadwick Alma, 3,798,256.
Seifert, Wolfgang. Apparatus for packing fruit. 3,797,199, Cl. 53-255.000.
Seiko Koki Kabushiki Kaisha: *See*—
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Seki, Masahiko; Imaida, Takayuki; and Funakoshi, Hiroyoshi, to Nippon Steel Corporation. Apparatus for supporting the body of the converter. 3,797,815, Cl. 266-36.00p.
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Seron, Suren M. Lanyard construction. 3,797,075, Cl. 24-73.00r.
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Shaffer, William E., to Stromberg-Carlson Corporation. Ring trip circuit. 3,798,384, Cl. 179-84.00r.
Shahir, Fred A.; and Clarke, William R., to Parker-Hannifin Corporation. Dewar filling, purging, and draining system. 3,797,263, Cl. 62-51.000.
Shaps, Robert S. Intravenous infusion assembly. 3,797,486, Cl. 128-214.00r.
Sharp, George C., Inc.: *See*—
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Sharp, William F., Jr.; and Enright, Thomas F., to Du Pont de Nemours, E. I., and Company. Explosion bonded aluminum to steel. 3,798,010, Cl. 29-196.200.
Sharp, William F., Jr., to Du Pont de Nemours, E. I., and Company. Multilayered metal composite. 3,798,011, Cl. 29-197.000.
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Shaw, John Arthur, to Colgate-Palmolive Company. Package of collapsible tubes and tray therefor. 3,797,648, Cl. 206-277.000.
Shaw, John M., to Hartzell Manufacturing, Inc. Door latch. 3,797,869, Cl. 292-207.000.
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Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; Kurozumi, Seizi; Takeuchi, Yoshinobu; and Nagahama, Shizuo, to Teijin Limited. Process for preparation of 2,6-dimethyl naphthalene. 3,798,280, Cl. 260-668.00f.
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Shimanckas, William J., to Outboard Marine Corporation. Stern drive unit with bellows enclosed reversing transmission and universal coupling steering control. 3,797,274, Cl. 64-16.000.
Shimazaki, Hideo; Mitsuura, Nobuhiro; and Tsukamoto, Shuji, to Ajinomoto Co., Inc. Process for preparing soybean phosphatides. 3,798,246, Cl. 260-403.000.
Shimizu, Mineo; Takechi, Hiroshi; Suemune, Kenichiro; Nagao, Setsuo; and Ohta, Kuniteru, to Nippon Steel Corporation. Method for producing al-killed deep drawing cold rolled steelplate by continuous annealing. 3,798,076, Cl. 148-12.000.
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Shinjo, Katsumi. Method of producing a locking nut with an insert. 3,797,547, Cl. 151-7.000.
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Shofner, Frederick M., to Environmental Systems Corporation. System for making particle measurements. 3,797,937, Cl. 356-102.000.
Short, Oliver Alton, to Du Pont de Nemours, E. I., and Company. Ceramic capacitors with noble electrodes alloy. 3,798,516, Cl. 317-258.000.
Shupp, Robert W. Lantern tote. 3,797,643, Cl. 206-1.00r.
Shurgot, John M.; and Ruebel, Roy D. Sectional ski. 3,797,838, Cl. 280-11.13k.
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Silverman, Avrum. Photographic coloring element and process. 3,798,037, Cl. 96-74.000.

Silverman, Elliott; and Cohen, Morton. Orthodontic element. 3,797,115, Cl. 32-14.00a.

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Simon, James B.; and Bullock, Thomas B., to Giddings & Lewis, Inc. Reduction of servo following errors in position and velocity control systems of the iteratively computing type. 3,798,430, Cl. 235-151.110.

Simoneau, Edward T.; Mueller, Richard E.; and Holdstock, Norman G., to General Electric Company. Silicone resins used as surfactants in vinyl chloride foam. 3,798,189, Cl. 260-2.50p.

Simorghi, Parviz. Separable key-head latch and case. 3,797,291, Cl. 70-395.000.

Simpson, Bruce L., trustee: *See*—
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Skarbo, Roald R., to Kennecott Copper Corporation. Separation of nickel from salt mixtures containing nickel and other metal salts. 3,798,307, Cl. 423-143.000.

Skidmore, Richard H., to Sprayon Products Inc. Power operated means for filling aerosol cans. 3,797,534, Cl. 141-3.000.

Skiens, William E.; Lipps, Ben J.; McLain, Earl A.; and Dubocq, Donald E., to Dow Chemical Company, The. Gas permeable membranes and process for making same. 3,798,185, Cl. 260-2.50m.

Skok, Jean, to Commissariat a l'Energie Atomique. Nuclear fuel subassembly. 3,798,125, Cl. 176-78.000.

Slodzian, Georges: *See*—
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Sly, Marlo R. Bed construction. 3,797,054, Cl. 5-101.000.

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Smallwood, Ross H. Storage box for fishing lures. 3,797,161, Cl. 43-57.50r.

Smelden, Stanley. Slideable puck. 3,797,057, Cl. 273-128.00r.

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Smith, James S.: *See*—
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Smith, Jessop; and Kocis, Thomas R., to Triple-S Development Co., Inc. Automatic shotgun choke. 3,797,155, Cl. 42-79.000.

Smith, Judson L. Turntable car wash. 3,797,059, Cl. 15-201.00d.

Smith, Laurence H., to Atlas Pacific Engineering Company. Machine for orienting pears. 3,797,639, Cl. 198-33.0aa.

Smith, Lester L., to H C Products Co. Fabricated plastic panels. 3,797,186, Cl. 52-314.000.

Smith, Leward N., to Marbark Industries, Inc. Sawmill log holder assembly. 3,797,349, Cl. 83-404.100.

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Smith, Richard F. Welding electrode having frictional loop engaging portion. 3,798,412, Cl. 219-145.000.

Smith, Richard J., to McGill Manufacturing Company, Inc. Shaft locking device for a bearing assembly. 3,797,901, Cl. 308-236.000.

Smith, Robert E., to Daton Progress Corporatiion. Apparatus for keying and locking elements to their retainers. 3,797,352, Cl. 83-699.000.

Smith, Walter E.: *See*—
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Smith, Ward Harris. Portable cleaning and sanitizing system. 3,797,744, Cl. 239-172.000.

Smithkline Corporation: *See*—
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Smitzer, Louis A., to Ovonic Image Systems, Inc. Microfiche reader with indexed fiche magazine. 3,797,925, Cl. 353-27.000.

Smolka, Thomas Gordon; and Schweizer, Gottfried, to Gertsch AG, mesne. Ski binding. 3,797,839, Cl. 280-11.35c.

Smolka, Thomas Gordon; and Schweizer, Gottfried, to Gertsch AG, mesne. Ski binding. 3,797,844, Cl. 280-11.35c.

Smulka, Roman, to Honeywell Inc. Fastening device for fastening a member through a hold in a wall from the inside surface of the wall. 3,797,866, Cl. 285-208.000.

Smyth Europea S.p.A.: *See*—
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Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem: *See*—
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Societe anonyme dite: L'Oreal: *See*—
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Societe Anonyme dite: Societe Industrielle pour la Fabrication des Antibiotique (S.I.F.A.): *See*—
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Societe Anonyme: Glaenzer Spicer: *See*—
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Societe d'Assistance Technique pour Produits Nistle S.A.: *See*—
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Societe de Fabrication d'Instruments de Mesure S.F.I.A.: *See*—
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Societe de: L"'Aerotrain": *See*—
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Societe des Accumulateurs Fixes de Traction (Societe Anonyme): *See*—
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Societe Pour L'Equipment Des Industries Chimiques: *See*—
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Soderquist, Frederick J.; and Martz, Lyle E., to Dow Chemical Company, The. Self-regenerative dehydrogenation catalyst. 3,798,178, Cl. 252-468.000.

Soehrens, John E., to Braum, C. F., & Co. Lifting saddle for vessels. 3,797,877, Cl. 294-67.00b.

Solder Removal Company: *See*—
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Soleri, Richard A. Shoe with flexible height adjustment sole and assorted heights interchangeable heels. 3,797,136, Cl. 36-42.000.

Soltys, Michael N., to Tektronix Inc. Storage tube with target having conductive surface exposed through random cracks in dielectric coating. 3,798,477, Cl. 313-68.00r.

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Soodalter, Arnold. Machine for dispensing shaped and portioned charges of a food product. 3,797,710, Cl. 222-219.000.
Sottle, William: *See—*
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Spence, John R., to North American Rockwell Corporation. Strobe driver including a memory circuit. 3,798,616, Cl. 340-173.00r.
Spencer, Lloyd. Intermittent irrigation system. 3,797,741, Cl. 239-11.000.
Spencer, Lloyd. Continous tube trickle irrigator. 3,797,754, Cl. 239-542.000.
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Stahlecker, Fritz, to Stahlecker, Wilhelm, G.m.b.H. Spinning turbine. 3,797,962, Cl. 415-169.000.
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Straitz, John F., III, to Combustion Unlimited, Incorporated. Crude oil burner. 3,797,992, Cl. 431-285.000.
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Sukolics, Ronald D., to American Metal Climax, Inc. Wall construction. 3,797,191, Cl. 52-664.000.
Sullivan, Thomas A.; Singleton, Eben L.; and Johnson, Morris L., to United States of America, Interior. Process for producing aluminum and silicon from aluminum silicon alloys. 3,798,140, Cl. 204-67.000.
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Suzuki, Joji; and Tanaka, Keihachiro, to Nippon Sheet Glass Co., Ltd. Laminated windshield structure. 3,798,113, Cl. 161-164.000.
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Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Automatic diaphragm control device for a camera. 3,798,661, Cl. 354-44.000.
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Takahashi, Nobuaki; Kasuga, Masao; and Ohsaki, Nobuhide, to Victor Company of Japan, Ltd. Expanding circuit in a compression and expansion system. 3,798,562, Cl. 330-28.000.
Takahashi, Toru; Ito, Yoshio; and Kodowaki, Hidejiro, to Canon Kabushiki Kaisha. Electrophotographic copying machine. 3,797,927, Cl. 355-3.000.
Takahashi, Yoshio; Abe, Kunio; and Igata, Toyonori, to Pioneer Electronic Corporation. Record-player for continuous play. 3,797,834, Cl. 274-10.00r.
Takahashi, Yukiharu; and Kubo, Moritada, to Tokyo Shibaura Electric Co., Ltd. High speed stepping motor with mechanical commutator. 3,798,526, Cl. 318-696.000.
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Taylor, Jack William, to Ingersoll Locks, Limited. Keys. 3,797,292, Cl. 70-409.000.
Taylor, Lynn J.; and Tobias, John W., to Owens-Illinois, Inc. Preparation of degradable polymeric material. 3,797,690, Cl. 220-1.00r.
Taylor, Michael Gordon, to Bell Telephone Laboratories, Incorporated. Adaptive transversal equalizer using a time-multiplexed second-order digital filter. 3,798,560, Cl. 328-167.000.
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Thibault, Jean-Jacques; and Boissin, Jean-Claude, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Low-temperature pumping device. 3,797,264, Cl. 62-55.500.
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Thomas Broadbert & Sons Limited: *See—*
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Thomas, Howard M.; Olszowka, Robert F.; and McNerney, Roger J., to Wurlitzer Company, The. Electronic musical instrument mechanical construction. 3,797,357, Cl. 84-423.000.
Thomas, James Kellett, to American Cyanamid Company. Spinning self-crimping composite fibers. 3,798,296, Cl. 264-171.000.
Thompson, Elliott R., Sr., to Bailey Meter Company. Bellows temperature bulb sensor. 3,797,316, Cl. 73-368.400.
Thompson, John T.; and Gillemot, George W. Molded plastic splice casing with combination cable anchorage and cable shielding grounding facility. 3,798,349, Cl. 174-92.000.
Thompson, John T.; and Gillemot, George W. Combination cable anchorage and grounding accessory. 3,798,585, Cl. 339-14.00r.
Thompson, Richard. Partition assembly. 3,797,184, Cl. 52-239.000.
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Titus, Hans-Joachim. Pressure-filtering apparatus and filtering method. 3,797,662, Cl. 210-78.000.
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Tomita, Chuji. Method for producing tungsten whiskers. 3,798,023, Cl. 75-.5bb.
Tomita, Masao; and Fujisawa, Kiyoji, to Matsushita Electric Industrial Co., Ltd. Noise reduction system. 3,798,559, Cl. 328-167.000.
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Toscano, Robert Julien: *See*—
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Troyer, Wade E.; and Wildenthaler, Leo E., to Hobart Brothers Company. Fume extracting welding gun nozzle. 3,798,409, Cl. 219-130.000.

Trusov, Sergei Mikhailovich. Hydraulic torque converter. 3,797,243, Cl. 60-361.000.

Truth Incorporated: *See*—
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Tsubaki, Toshio: *See*—
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Tsuzuki, Kaoru; and Kozaka, Setsuo, to NGK Insulators, Ltd. Electric insulators having non-corona and anti-pollution properties. 3,798,351, Cl. 174-140.00c.

Tucker, Council A., to Towlsaver, Inc. Roll supporting apparatus for roll towel dispenser. 3,797,769, Cl. 242-55.530.

Tufano, John J., Sr. Vehicle bumper impact absorbing system. 3,797,874, Cl. 293-86.000.

Tumerman, Leon, to Kraftco Corporation. Detergent composition. 3,798,168, Cl. 252-89.000.

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Turner, Anthony Leonard, to Turner Engineering Company (Coughton) Limited. Mowers. 3,797,211, Cl. 56-15.600.

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Tweit, Robert C., to Searle, G. D., & Co. 1-Benzyl-3-[2-phenoxy-5-(N-ethyl-N-phenylsulfamoyl) phenyl]-2-thioureas and congeners. 3,798,268, Cl. 260-552.00r.

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Uchiyama, Noboru; Yasuda, Naohiko; Yamatani, Tetsuo; Ariyoshi, Yasuo; Toi, Koji; and Sato, Naotake, to Ajinomoto Co., Inc. Method of producing α-dipeptide esters of L-aspartic acid. 3,798,206, Cl. 260-112.500.

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Umeda, Hiroyuki; and Fukatsu, Shichiro, to Victor Company of Japan, Ltd. Automatic tape loading type magnetic recording and reproducing apparatus. 3,797,776, Cl. 242-188.000.

Unger, Paul. Releasing heel retainer. 3,797,840, Cl. 280-11.35t.

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Van Koten, Gerard; and Leusink, Andre J., to International Copper Research Association. Aryl copper compounds and the salt complexes thereof. 3,798,248, Cl. 260-429.700.
Van Krimpen, Pieter C. A.; and Wetzler, Victor M. B., to Stamicarbon N.V. Process for preparing a fibre fleece. 3,798,298, Cl. 264-210.00f.
Van Meter, James Adams. Match book holder. 3,797,651, Cl. 206-107.000.
Van Toorn, Cornelis Hendrik. Connector for an element of the coaxial type. 3,798,348, Cl. 174-84.00s.
Van Veldhuizen, John. Monorail system including convertible air cushion vehicle provided with vertically retractable wheeled running gear. 3,797,400, Cl. 104-23.0fs.
Vanderpool, Clarence D.: *See—*
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Varga, Richard S.; and Szczepanski, Thomas R., to Goodrich, B. F., Company, The. Method of making flexible printing plates. 3,798,035, Cl. 96-35.100.
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Vasquez, Richard A. Cargo Tie-down attachment bracket. 3,797,859, Cl. 280-179.00r.
Vazquez, Salvador Morelos, to Colgate-Palmolive Company. Enzymatic detergent bar. 3,798,181, Cl. 252-539.000.
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Velasquez, Alfredo. Plug catcher for green aerator. 3,797,578, Cl. 172-22.000.
Ver Ploeg, Alonzo. Cutter disc. 3,797,544, Cl. 144-235.000.
Verbeke, Albert C., to BATIR. Method for producing cast three dimensional building components. 3,798,300, Cl. 264-250.000.
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Vermette, Howard H. Apparatus attachable to a truck body or the like for use for hoisting or lifting, or as an elevated support. 3,797,672, Cl. 212-8.000.
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Milner, Edward Francis Godfrey; Peters, Ernest; Swinkels, Godefridus Maria; and Vizsolyi, Andrew Imre, 3,798,026.
Vladik, Liboslav, to Semikron Gesellschaft fur Gleichrichlerbau und Elektronik m.b.H. Semiconductor circuit arrangement. 3,798,509, Cl. 317-234.00r.
Vlattas, Isidoros: *See—*
Finch, Neville; and Vlattas, Isidoros, 3,798,275.
Vogel, Norman A.: *See—*
Bliss, Burit E.; Dervan, James T., III; Griffith, Leroy E.; Pung, Bruce D.; Thorpe, Robert A.; and Vogel, Norman A., 3,798,610.
Voit, Willi; and Ziesche, Kurt, to Bosch, Robert, GmbH. Electromagnetically actuated fuel injection valve for internal combustion engines. 3,797,756, Cl. 239-585.000.

Vollrath, Gerd: *See—*
Juncker, Friedrich; Kranz, Johannes; Streich, Margin; Tanz, Heiner; and Vollrath, Gerd, 3,797,261.

Von Gunten, Leo J., to Dow Chemical Company, The. Rotary sealing roller. 3,798,110, Cl. 156-582.000.

von Hagen, Wolf-Rudiger, to Union Special Maschinenfabrik G.m.b.H. Controlled thread tensioner for sewing machines. 3,797,426, Cl. 112-254.000.

von Hoerschelmann, Konstantin: *See—*
Henning, Wolfgang; von Hoerschelmann, Konstantin; Kruger, Ingo; and Weidlich, Herbert, 3,798,080.

Von Lersner, Wolf A.; and Singer, Harry H., to Campbell Soup Company. Apparatus for extruding spherically-shaped food products. 3,797,069, Cl. 17-32.000.

Von Strandtmann, Maximilian; Shavel, John Jr.; Klutchko, Sylvester; and Cohen, Marvin, to Warner-Lambert Company. 3-(Methylsulfinyl)cinnolinones and their derivatives. 3,798,219, Cl. 260-250.00a.

Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., to Warner-Lambert Company. 3-(Hydroxymethyl)chromones. 3,798,240, Cl. 260-345.200.

Voorhees, John E.; and Hemmelgarn, Donald J., to Minster Machine Company, The. Arrangement for dynamic balancing of a high speed press. 3,797,327, Cl. 74-604.000.

Voskrekasenko, Leonid Sergeevich: *See—*
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Manzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 3,798,619.
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Voss, Hartwig, to Continental Gummi-Werke Aktiengesellschaft. Air spring bellows. 3,797,816, Cl. 267-965.00r.

Waagner-Biro Aktiengesellschaft: *See—*
Ivessa, Stefan, 3,797,812.

Wacker-Chemie G.m.b.H.: *See—*
Nitzsche, Siegfried; Bauer, Ignaz; Graf, Werner; and Zeller, Norbert, 3,798,252.

Waco Scaffold & Shoring Co.: *See—*
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Moritz, Donald B.; Wilson, David O.; and Mueller, Francis B., 3,797,793.

Wada, Goro: *See—*
Fujiwara, Hisao; Sakamoto, Kentaro; and Wada, Goro, 3,797,367.

Wada, Kenichi: *See—*
Tanaka, Susumu; Inoue, Masayoshi; Enoguchi, Yuji; Wada, Kenichi; and Fujiwara, Takao, 3,797,930.

Wagensonner, Eduard; Borowski, Kurt; and Furst, Walter, to Agfa-Gevaert Aktiengesellschaft. Photographic camera with arrangement for determining scene light sufficiency and for controlling exposure timing. 3,798,663, Cl. 354-51.000.

Wagner Electric Corporation: *See—*
Cake, Arthur F., 3,798,551.

Wagner, Jaromir, to Rukor, sdruzeny podnik Ono Decia. Arrangement for guiding of wire electrodes for a burner for metal coating by means of an electric arc. 3,798,411, Cl. 219-136.000.

Wagner, Nicholas A.: *See—*
Murphy, Alfred M.; Hagerman, Kenneth C.; and Wagner, Nicholas A., 3,798,024.

Wahlberg, Eric C. Business transaction apparatus. 3,798,603, Cl. 340-149.00a.

Wakabayashi, Takeshi: *See—*
Hoshi, Yoshimitu; Wakabayashi, Takeshi; and Uchida, Saburo, 3,798,380.

Wakamatsu, Hachiro; Sato, Jiro; and Hamaoka, Tatsunori, to Ajinomoto Co., Inc. Process of producing acetic acid from methyl formate. 3,798,267, Cl. 260-541.000.

Wakamatsu, Hisato: *See—*
Sumiyoshi, Masaharu; Arai, Hiroshi; Wakamatsu, Hisato; and Higo, Nobumasa, 3,798,596.

Wakimasu, Mitsuhiro: *See—*
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; and Wakimasu, Mitsuhiro, 3,798,204.

Wald Manufacturing Company, Incorporated: *See—*
Humlong, Robert Frank, 3,797,912.

Waldt, Leonard M.: *See—*
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Walker Bank and Trust Company, administrator with will annexed of the estate of said Brimhall, (deceased): *See—*
Brimhall, Ray S., 3,797,882.

Wallace, Paul F.: *See—*
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Wallace, Rodney L.: *See—*
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Wallace, William K.: *See—*
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Wallouch, Rudolph W., to Airco, Inc. High strength refractory concrete. 3,798,043, Cl. 106-64.000.

Walsh, David Joseph; and Kerr, Harry Sydney, to Kerr Instruments Limited. Pivotal surgical clip. 3,797,498, Cl. 128-325.000.

Walsh, Michael Adrian; and Costigan, Edward F. Multi-functional valve for use in the urethra. 3,797,478, Cl. 128-1.00r.

Walters, Armon J. Pneumatic scaling system. 3,797,890, Cl. 302-3.000.

Walters, Frank. Gaseous discharge display device with a layer of electrically resistant material. 3,798,483, Cl. 313-188.000.

Walters, John: *See—*
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Walworth, Vivian K.: *See—*
Eloranta, Vaito K.; and Walworth, Vivian K., 3,798,665.

Wan, Chong T.; Chambers, Douglas L.; and Carmichael, Donald C., to Shatterproof Glass Corporation. Method of making a transparent article having reduced radiation transmittance. 3,798,146, Cl. 204-192.000.

Wang, Chen-Shen, to Standard Oil Company. Process for production of polarylenes. 3,798,281, Cl. 260-670.000.

Wanie, Lee Joseph: *See—*
Erdman, Leon Paul; and Wanie, Lee Joseph, 3,797,214.

Wanner, John C., to Caterpillar Tractor Company. Guard assembly for track drive motors. 3,797,598, Cl. 180-6.480.

Ward, Brooke Armitage; and Reynolds, David A., to United Kingdom Atomic Energy Authority. Optical arrangements and apparatus. 3,797,908, Cl. 350-7.000.

Ward, William J., III: *See—*
Neulander, Charles K.; and Ward, William J., III, 3,797,202.

Warfield, Wayne: *See—*
Crim, Paul E.; and Warfield, Wayne, 3,797,497.

Warner & Swasey Company, The: *See—*
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Warner-Lambert Company: *See—*
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Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,798,240.
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Warwick Electronics Inc.: *See—*
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Warwick, Thomas R.: *See—*
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Wasser, Willi: *See—*
Herzhoff, Peter; Gref, Hans; Maus, Fritz; Browtzki, Kurt; Friedsam, Josef; Wasser, Willi; and Schweicher, Wolfgang, 3,797,551.

Wasson, Kenneth L., to Armstrong Cork Company. Support bar for suspended ceiling light fixture. 3,797,789, Cl. 248-214.000.

Watabe, Yoji: *See—*
Kaneko, Yoshio; Matsunaga, Tsutomu; Watabe, Yoji; and Toki, Shigeyuki, 3,798,200.

Watanabe, Hirotoshi: *See—*
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Watanabe, Masanori: *See—*
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Watanabe, Satoshi: *See—*
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Watanabe, Shosuke; deceased (by Watanabe, Naoko; sole successor), to Nippon Steel Corporation. Jet engine blast fence. 3,797,787, Cl. 244-114.00b.

Watanabe, Tadakiyo; Konishi, Hiromu; and Chiku, Ken-Ichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Bumper for vehicles. 3,797,872, Cl. 293-30.000.

Watanabe, Yoshimi: *See—*
Narahara, Hisaaki; Numakura, Toshihiko; and Watanabe, Yoshimi, 3,798,361.

Waterman, Neil S.: *See—*
Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S., 3,798,611.

Waters, John Henry, to Dowty Hydraulic Units Limited. Hydraulic apparatus. 3,797,244, Cl. 60-443.000.

Watkin, Theodore: *See—*
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Watkin, Theodore, to Watkin, Theodore, Friedman, Maurice W. and Friedman, Alfred S. Spring clip for folded garments and the like. 3,797,076, Cl. 24-255.0gp.

Watson, Richard E., to Dow Chemical Company, The. Thermostable polymeric vinylidene chloride compositions. 3,798,195, Cl. 260-30.40r.

Watts, Ian, to General Engineering Co., (Radcliffe), Limited. Rotary vacuum pumps. 3,797,971, Cl. 418-84.000.

Watts, Lewis William, Jr., to Jefferson Chemical Company, Inc. Ethers of polychlorinated benzonitriles. 3,798,255, Cl. 260-465.00f.

Wayne, Clyde D.: *See—*
Miller, Roland E.; and Wayne, Clyde D., 3,797,343.

Weatherhead, Herman R.; and Gibson, William P., to Chrysler Corporation. Refrigerant compressor. 3,797,969, Cl. 417-273.000.

Webb, Brian C., to Edwards, Allen, Inc. Pipeline anchoring system. 3,797,260, Cl. 61-72.100.

Webb, William L.; Warwick, Thomas R.; Hackey, Ronald D.; and Price, Robert L., to United Aircraft Corporation. Integrated control for a turbopropulsion system. 3,797,233, Cl. 60-39.16r.

Weber, Heinrich: *See—*
Streck, Roland; and Weber, Heinrich, 3,798,175.

Webster, Frank G.: *See—*
McColgin, William C.; and Webster, Frank G., 3,798,566.

Weggeland, John H., to WML, Incorporated. Display-type picture viewer. 3,797,144, Cl. 40-36.000.

Wehner, Byrom T., to Armco Steel Corporation. High pressure joint and sealing ring therefor. 3,797,835, Cl. 277-171.000.

Wehrli, Pius Anton, to Hoffmann-La Roche Inc. Synthesis of γ ketoesters. 3,798,259, Cl. 260-483.000.

Weichbrodt, Bjorn; and Darrel, Bernard, to General Electric Company. Foreign object impact detection in multi-bladed fluid engines. 3,798,626, Cl. 340-267.00r.

Weidlich, Herbert: *See—*
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Weiler, David W.: *See—*
Paul, Richard S.; and Weiler, David W., 3,797,559.

Weininger, Edwin Charles. Fastening means for tubular members. 3,797,948, Cl. 403-245.000.

Weinreich, Wolfgang: *See—*
Kutzer, Hans-Joachim; Weinreich, Wolfgang; Harmsen, Lothar; and Fricke, Gerd D., 3,797,712.

Weir Pumps, Limited: *See—*
Randell, Forrest Thomson, 3,797,966.

Weisbecker, Joseph A., to RCA Corporation. Computer system with program-controlled program counters. 3,798,615, Cl. 340-172.500.

Weiss, David E., to United States of America, Navy. Device for counting accelerations, measuring magnitudes thereof, recording and classifying the same according to magnitude. 3,798,454, Cl. 250-231.000.

Weiss, Hans-Peter: *See—*
Hofmann, Alfred; and Weiss, Hans-Peter, 3,798,115.

Weiss, Karl Eugene; and Cameron, Colin McKenzie, to South African Inventions Development Corporation. Precipitation of bacterial cells with polymers. 3,798,320, Cl. 424-92.000.

Weiss, Reinhold, to Krone GmbH. Tunable crystal oscillator. 3,798,572, Cl. 331-108.00d.

Weisskopf, Isaac. Ash tray smoke remover. 3,797,205, Cl. 55-385.000.

Welded type francis runner: *See—*
Tonooka, Hidenori; Okuni, Tetsuo; Ito, Hideo; Kawano, Michitada; Jimbo, Tadashi; and Fukasu, Shunichi, 3,797,965.

Weldon, Howard L., to Owens-Illinois, Inc. Carton with improved hand holes. 3,797,731, Cl. 229-52.00b.

Wendl, Erwin: *See—*
Haller, Hans; and Wendl, Erwin, 3,797,193.

Weng, Andrew Chung-Yen, to Swift & Company. Preparation of a milk substitute product. 3,798,339, Cl. 99-64.000.

Werle, Eugen; and Fritz, Hans, to Bayer Aktiengesellschaft. Derivatives of the kallikrein inhibitor and their production. 3,798,205, Cl. 260-112.500.

Wescor, Inc.: *See—*
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Wespi, George E., to Warner & Swasey Company, The. Dual-cycle cam grinding machine with electrical pulse operated wheel feed. 3,797,176, Cl. 51-101.00r.

Westacott, Harry L.: *See—*
Endter, Dale S.; Miller, Edwin E.; and Westacott, Harry L., 3,797,932.

Westermann, Donald H.; Chicoye, Etzer; and Hoffmann, Darrell R., to Miller Brewing Company. Preparation of hop extracts and use in beer making operation. 3,798,332, Cl. 426-29.000.

Western Electric Company, Incorporated: *See—*
Brown, Donald R.; and Masopust, Otto T., Jr., 3,797,771.
Ellis, Benjamin Clement, Jr.; Scholly, Christian; McGonigal, Charles; and Snyder, John Howard (said McGonigal, said Scholly and said Snyder assor. to), 3,798,587.

Western Roto Thresh Ltd.: *See—*
Reed, William B.; and Bigsby, Floyd W., 3,797,502.

Westernacher, Helmut, to Chemische Werke Huls Aktiengesellschaft. Builder-containing detergent compositions. 3,798,180, Cl. 252-527.000.

Westfalia Separator AG: *See—*
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Westinghouse Electric Corporation: *See—*
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Chu, Chang Kwei; and Krishna, Surinder, 3,798,079.
Levine, Samson P.; Kugler, Ralph W.; Candek, Anthony J.; and Long, Arthur H., 3,798,093.
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Westlinning, Hermann: *See—*
Rocktaschel, Gottfried; Thurn, Friedrich; Fleischhauer, Horst; Schwarze, Werner; and Westlinning, Hermann, 3,798,196.

Weston, David. Hydro-metallurgical treatment of nickel cobalt and copper containing materials. 3,798,304, Cl. 423-36.000.

Westvaco Corporation: *See—*
Goodsite, James R., 3,797,653.

Westwig, Ralph A., to Corning Glass Works. Fiber optic device having some fibers clad with absorbing glasses. 3,797,910, Cl. 350-96.00b.

Wetzler, Victor M. B.: *See—*
Van Krimpen, Pieter C. A.; and Wetzler, Victor M. B., 3,798,298.

Wetzold, Paul W. Production of bismuth oxychloride crystals of enhanced luster and covering power. 3,798,313, Cl. 423-472.000.

Wey, Raymond: *See—*
Guth, Jean-Louis; Pereyron, Albert; and Wey, Raymond, 3,798,311.

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WHB-Anbausnobel von Poschinger K.G.: *See—*
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Whirlpool Corporation: *See—*
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White, Eugene F. Strand tension control. 3,797,775, Cl. 242-155.00m.

White, Harold V.: *See—*
Stripling, William W.; White, Harold V.; and Hunter, Joe S., 3,797,782.

White, Herschel T.: *See—*
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White, John A.: *See—*
Menefee, Julius H.; Novak, William P.; and White, John A., 3,798,448.

White, Paul; and Wilson, Robert H., to Ameco, Inc. Discrete cable television distribution system. 3,798,548, Cl. 325-309.000.

Whitehead & Kales Company: *See—*
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Whitehouse, Joseph Colin, to Rank Organisation Limited, The. Camera lens control mechanism. 3,798,517, Cl. 318-3.000.

Whitin Machine Works, Inc.: *See—*
Kieronski, John P.; and Johnson, Ray C., 3,797,219.

Whitley, James Brooks; and Abercrombie, William Floyd, Jr., to Huber, J. M., Corporation. Process for manufacturing calcined kaolinitic clay products. 3,798,044, Cl. 106-288.00b.

Widdowson, R. Donald, to Smith, Elwin G., Division-Cyclops Corporation. Prefabricated, insulated, metal wall panel. 3,797,190, Cl. 52-595.000.

Wightman, Lawrence W.; and Paul, Eugene F., to Emerson Electric Co. Roller ridge expanding tool. 3,797,297, Cl. 72-393.000.

Wiland, Lawrence. Detachable mount for a dental cap and prosthodontic procedure utilizing the same. 3,797,114, Cl. 32-12.000.

Wilcom Products, Inc.: *See—*
Campbell, Richard H., Jr.; and Wilkens, William B., 3,798,541.

Wildenthaler, Leo E.: *See—*
Troyer, Wade E.; and Wildenthaler, Leo E., 3,798,409.

Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon conversion process and bimetallic catalytic composite for use therein. 3,798,155, Cl. 208-139.000.

Wilkens, William B.: *See—*
Campbell, Richard H., Jr.; and Wilkens, William B., 3,798,541.

Wilkinson, Thomas Frank, to Texas Instruments Incorporated. Workpiece alignment system. 3,797,889, Cl. 302-2.00r.

Willett, Colin S., to United States of America, Army. Atmospheric pressure induction plasma laser source. 3,798,568, Cl. 331-94.500.

Williams, Duane A.: *See—*
Poole, Donald R.; Stang, Peter L.; Mars, James E.; and Williams, Duane A., 3,797,854.

Williams, Earl E., to General Electric Company. Pitot tube dielectric antenna system. 3,798,652, Cl. 343-708.000.

Williams, Garnet Montague, to Ferraris Development & Engineering Company Limited. Apparatus for indicating the rate of fluid flow. 3,797,480, Cl. 128-2.080.

Williams, Heyward Sturges; and Robbins, Robert, to LRC, Inc. Switch driver. 3,798,471, Cl. 307-255.000.

Williams, John E., Jr., to Lockheed Aircraft Corporation. Modular cargo container for transport vehicles. 3,797,691, Cl. 220-1.500.

Williams, Richard R.: *See—*
Killion, Marvin L.; and Williams, Richard R., 3,797,577.

Williams, Robert A.: *See—*
Blanchard, Robert L.; Sherburne, Arthur E.; and Williams, Robert A., 3,797,311.

Willich, Jean Herbert; and De Baan, Johannes Jasper, to August Bilstein Ennepetal-Altenwoerde, Firma. Hydraulic telescopic shock absorber. 3,797,818, Cl. 267-122.000.

Willing, Wilfried: *See—*
Wolf, Gunter; and Willing, Wilfried, 3,797,567.

Wilson, David O.: *See—*
Moritz, Donald B.; Wilson, David O.; and Mueller, Francis B., 3,797,793.

Wilson, James H.: *See—*
Babcock, Clarence E.; and Wilson, James H., 3,797,310.

Wilson, Patrick Oliver, to Illumination Industries, Inc. Illuminator for exposing color television tubes during the manufacturing process thereof and the like. 3,798,441, Cl. 240-41.35r.

Wilson, Robert H.: *See—*
White, Paul; and Wilson, Robert H., 3,798,548.

Wind-Wonder, Inc.: *See—*
04/19/74; and Jones, James D., 3,797,374.

Winders, Frank R., Jr.: *See—*
Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., 3,798,500.

Windle, William. Pigments. 3,797,610, Cl. 186-306.000.

Wingerd, Eldon S. Arithmetic concepts display board. 3,797,134, Cl. 35-34.000.

Winkler, Richard H.: *See—*
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Winkler, Rudolf: *See—*
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Wirstein, Arthur N.: *See*—
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Wissmann, Ing Kurt. Reciprocating conveyors. 3,797,637, Cl. 198-221.000.

Witkowski, Joseph T.; and Robins, Roland K., to ICN Pharmaceuticals, Inc. 1,2,4-Triazole nucleosides. 3,798,209, Cl. 260-211.50r.

Wittekind, Raymond R.; and Shavel, John, Jr., to Warner-Lambert Company. 2-(Furfurylamino)-1-(2-imidazolin-2-yl)-2-imidazoline hydroiodide. 3,798,232, Cl. 260-309.600.

Wittern, Francis A.; and Wirstein, Arthur N., to Fawn Engineering Corporation. Article holding and dispensing device. 3,797,699, Cl. 221-85.000.

Witting, Harald L., to General Electric Company. Lamp apparatus for improving wall darkening characteristics. 3,798,485, Cl. 313-205.000.

Witz, Samuel; and Moyer, Rudolph H., to Aerojet-General Corporation. Method and apparatus for indicating microorganic matter by means of chemiluminescence. 3,797,999, Cl. 23-230.00r.

Witzel, Walter H.; and Doyle, Edward F., to Thermo Electron Corporation. Rankine cycle start up system. 3,797,248, Cl. 60-646.000.

Witzmann, Hans-Klaus; and Kraus, Gabriella, to Henkel & Cie GmbH. Adhesive spreader assembly. 3,797,946, Cl. 401-116.000.

WML, Incorporated: *See*—
Weggeland, John H., 3,797,144.

Woelm, M.: *See*—
Schmidt, Gunther, 3,797,487.

Wolf, Gunter; and Willing, Wilfried, to Strunck, H., & Co., Maschinenfabrik. Continuous sterilizing apparatus. 3,797,567, Cl. 165-120.000.

Wolfe, Wayne F., to United Can Company. Method and apparatus for necking and flanging can bodies. 3,797,429, Cl. 113-1.00g.

Wolff, Edwin K., to NJM, Inc. Offset printing press. 3,797,389, Cl. 101-228.000.

Wolff, Heinz, to Otto, C., Dr., & Comp. G.m.b.H. Gas and liquid contact apparatus. 3,797,810, Cl. 261-111.000.

Wolk, John R.: *See*—
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Woltzen, Herschel E.: *See*—
Ruppe, Robert C.; and Woltzen, Herschel E., 3,797,229.

Wontrobski, Charles E.: *See*—
Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., 3,798,500.

Wood, Howard J.; and Greiner, James A., to Engineered Products. Sewage comminutor. 3,797,762, Cl. 241-36.000.

Wood, Paul R. Reel flange manufacturing machine. 3,797,542, Cl. 144-4.000.

Woods, Terrill Wayne: *See*—
Magruder, Michael Keith; and Woods, Terrill Wayne, 3,797,798.

Woodward, Clifford Stanley: *See*—
Clark, Kenneth William; and Woodward, Clifford Stanley, 3,797,561.

Woolsey, Nils S.; and Van Blair, Wade, to Quadall Company, Inc. Boat anchor. 3,797,443, Cl. 114-206.00r.

Workman, Lester J. Directional coupler having directly connected taps. 3,798,574, Cl. 333-10.000.

Worner, Gunter; and Schrape, Peter, to Daimler-Benz Aktiengesellschaft. Adjusting mechanism for the intermediate plate in two disc clutches. 3,797,622, Cl. 192-111.00a.

Wright, Robert A., Jr., to Allied Chemical Corporation, mesne. Bag deployment. 3,797,855, Cl. 280-150.0ab.

Wright, Robert H., to British Columbia Research Council. Methods and compositions for selectively attracting yellow-jacket wasps. 3,798,318, Cl. 424-84.000.

Wu, Yulin, to Phillips Petroleum Company. Process for the production of bis(2-hydroxyethyl)terephthalate. 3,798,257, Cl. 260-475.00p.

Wuerker, Ralph F.: *See*—
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Wurlitzer Company, The: *See*—
Thomas, Howard M.; Olszowka, Robert F.; and McNerney, Roger J., 3,797,357.

Wycoff, Keith H. Automatic identification system. 3,798,546, Cl. 325-166.000.

Wyman, David Alfred: *See*—
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Xerox Corporation: *See*—
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Yabuuchi, Yasuo: *See*—
Maruyama, Shiro; Iwai, Ken; Yabuuchi, Yasuo; and Maki, Syoji, 3,797,439.

Yago, John Gerald; Haas, Robert George; and Rheinfrank, George Bruckner. Cold sprue injection molding device with integral sprue chamber and injection nozzle. 3,797,984, Cl. 425-243.000.

Yahalom, Joseph, to Bell Telephone Laboratories, Incorporated. Technique for electroetching thin film metallization. 3,798,141, Cl. 204-129.430.

Yamada, Hiroshi; and Hirose, Hiroshi, to Ricoh Co. Ltd. Circuitous passageway for drying copy sheets. 3,797,127, Cl. 34-123.000.

Yamada, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Front seat back providing protection to occupants of rear seats of a motor vehicle. 3,797,858, Cl. 280-150.00b.

Yamada, Naoya; Nagai, Nobuo; and Tada, Shoji, to Mitsubishi Denki Kabushiki Kaisha. Spark gap device for lightning arrester. 3,798,498, Cl. 315-36.000.

Yamada, Norio; Iguchi, Yoji; Tanaka, Yoshimasa; Oho, Tatsuke; and Ikejima, Yoritaka, to Matsushita Electric Works Ltd. Electric shaver with rockable shaving head. 3,797,109, Cl. 30-431.000.

Yamada, Yasuo: *See*—
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,798,293.

Yamagiwa, Masanori: *See*—
Tanji, Mikiharu; and Yamagiwa, Masanori, 3,797,596.

Yamaguchi, Ikuo: *See*—
Kobayashi, Shoichi; Yamaguchi, Ikuo; and Konami, Katuyoshi, 3,797,183.

Yamaguchi, Shunzo: *See*—
Inoue, Tokuta; and Yamaguchi, Shunzo, 3,797,240.

Yamamichi, Masayoshi: *See*—
Hasegawa, Goro; Iura, Yukio; and Yamamichi, Masayoshi, 3,798,660.

Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, to Sumitomo Chemical Company, Limited. Novel method for producing 1-phenyl-3-indolylacetic acid derivatives. 3,798,235, Cl. 260-326.13r.

Yamamoto, Kazuko. Double-type continuous curve drawing tool. 3,797,118, Cl. 33-27.00c.

Yamano, Togo: *See*—
Meguro, Kanji; Kuwada, Yutaka; Henmi, Teruji; and Yamano, Togo, 3,798,226.

Yamashita, Norio: *See*—
Ikeguchi, Shigehiko; and Yamashita, Norio, 3,798,463.

Yamatani, Tetsuo: *See*—
Uchiyama, Noboru; Yasuda, Naohiko; Yamatani, Tetsuo; Ariyoshi, Yasuo; Toi, Koji; and Sato, Naotake, 3,798,206.

Yamawaki, Shunro; Makita, Naoki; and Hirose, Kazuhiko, to Tokico Ltd. Fuel supplying apparatus. 3,797,703, Cl. 222-26.000.

Yamaya, Susumu; and Sadahiro, Takeshi, to Toshiba Tungaloy Co., Ltd. Hard sintered composition. 3,798,009, Cl. 29-182.700.

Yamazaki, Shumpei. Method for forming a single-layer nitride film or a multi-layer nitride film on a portion of the whole of the surface of a semiconductor substrate or element. 3,798,061, Cl. 117-213.000.

Yano, Katsuhiko: *See*—
Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; Yano, Katsuhiko; Sugiura, Hiroshi; and Takada, Nobuo, 3,798,054.

Yarsa, Frank J.: *See*—
Paridon, Leo J.; Dye, Cloyde G.; and Yarsa, Frank J., 3,798,018.

Yasuda, Naohiko: *See*—
Uchiyama, Noboru; Yasuda, Naohiko; Yamatani, Tetsuo; Ariyoshi, Yasuo; Toi, Koji; and Sato, Naotake, 3,798,206.

Yasuda, Tooru: *See*—
Saito, Teruo; Ide, Susumu; Yasuda, Tooru; and Enomoto, Shigeru, 3,798,362.

Yates, John Allan: *See*—
Ormesher, Edward Russell; and Yates, John Allan, 3,798,016.

Yeo, Herbert G.: *See*—
Damon, Neil F.; and Yeo, Herbert G., 3,798,507.

Yetter, Harry G. Levels and level determining devices. 3,797,125, Cl. 33-387.000.

Yih, Roy Y.: *See*—
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 3,798,276.

Yin, Chieh-Kung; Klein, Roy W.; and Johnson, Bernard A., to Mangood Corporation. System for digital weighing with zeroizing for thermal effects. 3,797,595, Cl. 177-164.000.

Yoder, Royce A.: *See*—
Friend, Aaron D.; Nelson, Gary L.; and Yoder, Royce A., 3,798,520.

Yokogawa Electric Works, Ltd.: *See*—
Hasebe, Takefumi; Takizawa, Arata; and Sato, Setsuo, 3,798,659.

Yonehara, Setsuji: *See*—
Nakanishi, Toru; Matsui, Junichi; Yonehara, Setsuji; Aoki, Masahiro; Ishiguro, Kiyonori; Satake, Tatsuo; and Azuma, Shingi, 3,797,666.

Yoo, Jin Sun, to Atlantic Richfield Company. Olefin oligomerization process. 3,798,285, Cl. 260-683.15d.

Yoshida, Kozaburo: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; Uehori, Kinzi; Ohtaka, Satoshi; and Yoshida, Kozaburo, 3,798,314.

Yoshikawa, Seiichi. Riveting machine. 3,797,365, Cl. 91-402.000.

Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, to Bridgestone Tire Company, Limited. Rubber blends containing an hydrogenated styrene butadiene random copolymer. 3,798,190, Cl. 260-5.000.

Yoshimura, Takayuki, to Daiwa Can Company Limited. Method of manufacturing the body of a neck-in can and an apparatus used therefor. 3,797,431, Cl. 113-120.0aa.

Yoshino Kogyosho Co., Ltd.: *See*—
Nozawa, Takamitsu; and Kishi, Takao, 3,797,748.

Yost, Edward F., Jr., to Spectral Data Corporation. Isoluminous additive color multispectral display. 3,798,033, Cl. 96-5.000.

Young, Claude Frank; and Offenhauer, Charles Martin, to Union Carbide Corporation. Apparatus for producing sized ferroalloy particles. 3,797,978, Cl. 425-8.000.

Young, John, Jr.; and Maguire, Barry Paul. Incinerator with a plurality of outer walls and a hollow grate. 3,797,415, Cl. 110-8.00c.

Young, S. Albert, 1/3 interest each to Rineman, Harold J. and Rineman, Richard L. Folding motorized vehicle. 3,797,597, Cl. 180-1.00f.

Youngflex S.A.: *See—*
Griffiths, David Thomas, 3,797,886.

Youngstown Steel Door Company, The: *See—*
Fritz, William E., 3,797,891.

Zach, Ella; deceased (Zach, Gunther; legal representative), to Zach, Ludwig, Verpackunger. Two part box. 3,797,730, Cl. 229-43.000.

Zach, Gunther: *See—*
Zach, Ella, 3,797,730.

Zach, Ludwig, Verpackunger: *See—*
Zach, Ella, 3,797,730.

Zachary, Paul Byne, to Emerson Labeltape Corporation. Sewing tape. 3,797,120, Cl. 33-137.00r.

Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Air-laying process for forming a web of textile fibers. 3,797,074, Cl. 156-300.000.

Zaharoni, Isaac. Control system for environmental conditioning units. 3,797,560, Cl. 161-26.000.

Zai Faroni, Alejandro, to Alza Corporation. Bandage for the administration of drug by controlled metering through microporous materials. 3,797,494, Cl. 128-268.000.

Zaidan, Joseph P. Shag rug vacuum head. 3,797,066, Cl. 15-369.000.

Zaika, Jury Pavlovich: *See—*
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Manzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 3,798,619.
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Monzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 4,798,619.

Zakharov, Georgy Pavlovich: *See—*
Vasilkovsky, Vitaly Pankratievich; Grebnev, Nikolai Feodosovich; Efimov, Leonid Alexandrovich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andreevich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andrevich; Pylaikin, Petr Alexeevich; Rozanov, Boris Vasilievich; Sinitsky, Vladimir Mikhailovich; and Khirdzhiev, Sergei Grigorievich, 3,797,298.

Zavadsky, Vladimir Alexandrovich: *See—*
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Manzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 3,798,619.
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Monzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 4,798,619.

Zax, Grigory Iosifovich: *See—*
Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Goltsman, Samuil Aronovich; Oleinik, Alexandr Ivanovich; and Frumkin, Mikhail Evseevich, 3,797,677.

Zeimer, Harry, to State of Israel, The. Transporter for use in water. 3,797,445, Cl. 115-1.00r.

Zelda Nievelt, mesne: *See—*
Nievelt, Frank J., 3,797,181.

Zeller, Norbert: *See—*
Nitzsche, Siegfried; Bauer, Ignaz; Graf, Werner; and Zeller, Norbert, 3,798,252.

Zeller, Rainer, to Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft. Fuel for a magneto-hydrodynamic generator. 3,798,089, Cl. 149-22.000.

Zenith Radio Corporation: *See—*
Dietch, Leonard, 3,798,369.
Manske, Hans E., 3,798,493.
Manske, Hans E., 3,798,497.

Zepell, Nathan A. Multi-tip writing instrument with swinging door selector. 3,797,945, Cl. 401-33.000.

Zerachia, Avraham; Friedgut, Natan; and Steinman, Gary, to Ames-Yissum, Ltd. Test device. 3,798,004, Cl. 23-253.0tp.

Zichner, Gerhard, to Strabag Bau-A.G. Wearing courses of stone and mastic on pavements. 3,797,951, Cl. 404-19.000.

Ziegler, Carl; and Sprague, James M., to Merck & Co., Inc. Sulfonylbenzenesulfonic acids. 3,798,262, Cl. 260-505.00r.

Ziesche, Kurt: *See—*
Voit, Willi; and Ziesche, Kurt, 3,797,756.

Zilkha, Sammy, to Alphameric Holdings Limited. Keyboard for electronic circuit. 3,797,630, Cl. 197-98.000.

Zimmermann, Josef: *See—*
Gumm, Peter; Krubig, Karl-Heinz; Lohmann, Jorg; and Zimmermann, Josef, 3,798,299.

Zitt, Rolf: *See—*
Flury, Karl; and Zitt, Rolf, 3,797,724.

Zivanovic, Srbislav V.: *See—*
Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, 3,798,643.

Zock, Hendrik Frits: *See—*
Van Buren, Alex Maarten; Cloosterman, Aloysius Bernardus Maria; Rek, Johannes Henricus Maria; and Zock, Hendrik Frits, 3,798,245.

Zollweg, Robert J.; Blackham, Kenneth K.; and Burnham, Walter J., to Westinghouse Electric Corporation. Discharge lamp which incorporated divalent cerium halide and cesium halide and a high mercury loading. 3,798,487, Cl. 313-229.000.

Zuest, Armin: *See—*
Schindler, Walter; and Zuest, Armin, 3,798,325.

Zumbach Electronic Automatic: *See—*
Brunner, Mathias, 3,797,121.

Zurakowski, Stanley J.: *See—*
Tambert, John; Zurakowski, Stanley J.; and Jacobson, Charles L., 3,798,598.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Gaffey, Troy M., and K. G. Wernicke, to Textron Inc. In-plane out-or-plane flapping prop-rotor frequency decoupling. Re. 27,941, 3–19–74, Cl. 416—102.

Home Comfort Products Co.: *See*—
Smith, Lester L. Re. 27,943.

Setina, John R. Automobile partition apparatus pivoted on guardplate. Re. 27,942, 3–19–74, Cl. 296—24.

Smith, Lester L., to Home Comfort Products Co. Roof ridge ventilator. Re. 27,943, 3–19–74, Cl. 98—42.

Textron Inc.: *See*—
Gaffey, Troy M., and Wernicke. Re. 27,941.

Wernicke, Kenneth G.: *See*—
Gaffey, Troy M., and Wernicke. Re. 27,941.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See*—
Lammerts, Walter E. 3,525.

Bond, Ralph, W. H. Jessel, Jr., and W. E. Duffett, said Jessel and said Duffett assors. to said Bond. Chrysanthemum plant. 3,523, 3–19–74, Cl. 74.

Butters, Keith D., to Yoder Brothers, Inc. Chrysanthemum plant. 3,526, 3–19–74, Cl. 74.

Driscoll Strawberry Association, Inc.: *See*—
Johnson, Harold A., Jr. 3,529.

Duffett, William E.: *See*—
Bond, Ralph, Jessel, and Duffett. 3,523.
Jessel, Walter H., Jr., and Duffett. 3,521.
Jessel, Walter H., Jr., and Duffett. 3,527.

Frampton's Nurseries Ltd.: *See*—
Machin, Barrie J. 3,528.

Jackson & Perkins Co.: *See*—
Warriner, William A. 3,522.

Jessel, Walter H., Jr.: *See*—
Bond, Ralph, Jessel, and Duffett. 3,523.
Mack, Grace H., Jessel, and Duffett. 3,530.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,521, 3–19–74, Cl. 79.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,527, 3–19–74, Cl. 77.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 3,529, 3–19–74, Cl. 49.

Lammerts, Walter E., to Armstrong Nurseries, Inc. Rose plant. 3,525, 3–19–74, Cl. 22.

Machin, Barrie J., to Frampton's Nurseries Ltd. Chrysanthemum plant-Europa. 3,528, 3–19–74, Cl. 78.

Mack, Grace H., W. H. Jessel, Jr., and W. E. Duffett to Grace H. Mack. Chrysanthemum plant. 3,530, 3–19–74, Cl. 74.

Mack, Grace H.: *See*—
Mack, Grace H., Jessel, and Duffett. 3,530.

McGredy, Samuel. Rose plant. 3,524, 3–19–74, Cl. 22.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,522, 3–19–74, Cl. 20.

Yoder Brothers, Inc.: *See*—
Butters, Keith D. 3,526.
Jessel, Walter H., Jr., and Duffett. 3,521.
Jessel, Walter H., Jr., and Duffett. 3,527.

LIST OF DESIGN PATENTEES

AB Automatic: *See*—
Sonnerguard, Arne N. C. 230,834.

Ace-In-The-Hole, Inc.: *See*—
Wagner, Arthur C. 230,821.

Alberti, John L. Candle holder. 230,877, 3–19–74, Cl. D48—2.

American Hospital Supply Corp.: *See*—
Edwards, Frank M. 230,896.
Edwards, Frank M. 230,897.

American Seating Co.: *See*—
Barecki, Chester J. 230,786.

Amerock Corp.: *See*—
Tegner, Raymond U. H. 230,796.

Arruda, Antone. Submersible aircraft. 230,893, 3–19–74, Cl. D71—1.

Automatic Radio Mfg., Co., Inc.: *See*—
Lyall, George E. 230,864.

Baker, John C.: *See*—
Mansur, Fred F., Sallbury, and Baker. 230,854.

Bardeau, William M., to Bardeau Ltd. Appliance for heating and cooking foods. 230,813, 3–19–74, Cl. D7—121.

Bardeau Ltd.: *See*—
Bardeau, William M. 230,813.

Barecki, Chester J., to American Seating Co. Transit seat. 230,786, 3–19–74, Cl. D6—26.

Baynes, William H. Concentric cubic puzzle. 230,874, 3–19–74, Cl. D34—15.

Bean, Wilford E.: *See*—
Lorenz, Leo J., and Bean. 230,876.

Beatrice Food Co.: *See*—
Visscher, Dennis. 230,833.

Beddick, Frank G., to Queen Cutlery Co. Sheath for a knife. 230,847, 3–19–74, Cl. D22—13.

Bell, James M.: *See*—
Musgrave, Donald A., and Bell. 230,803.

Bevilacqua, Ernest M.: *See*—
Noyes, Eliot, and Bevilacqua. 230,789.

Birks, Carolyn A. Toilet tissue dispensing holder. 230,795, 3–19–74, Cl. D6—97.

Bowles, Samuel V. Transportable refuse container. 230,841, 3–19–74, Cl. D12—98.

Brigham, Owsley H. Compass holder for scuba divers. 230,883, 3–19–74, Cl. D52—6.

Brown, Joyce E., to C.I.I., Inc. Supporting clip for flower pots or the like. 230,827, 3–19–74, Cl. D8—257.

Bruce, Robert A., to Corning Glass Works. Frame for continuous cooktop surface or the like. 230,812, 3–19–74, Cl. D7—121.

C.I.I., Inc.: *See*—
Brown, Joyce E. 230,827.

Caban, Leslie L. Key receptacle for an automotive vehicle. 230,899, 3–19–74, Cl. D87—1.

Carpenter, Herbert R., to Seaquist Valve Co. Combined overcap and button actuator for a pressurized container. 230,831, 3–19–74, Cl. D9—258.

Carter-Hoffman Corp.: *See*—
Hoffman, Carter C., and Luoma. 230,798.

Cheyne, Donald G. Steam cooking pot. 230,811, 3–19–74, Cl. D7—85.

Chisholm, James E., to Formica Corp. Bathtub. 230,851, 3–19–74, Cl. D23—55.

Cicero, Edward L. Golf putter. 230,873, 3–19–74, Cl. D34—5.

Citizen America Corp.: *See*—
Lampel, George J. 230,857.

Columbia Broadcasting System, Inc.: *See*—
Gluck, Daniel. 230,823.

Cousins, Michael A.: *See*—
Cousins, Morison, and M. A. 230,852.

Cousins, Morison S., and M. A. Cousins. Shower stall. 230,852, 3–19–74, Cl. D23—57.

Covey, Laird F., to The Stanley Works. Cutting and abrading blade holder. 230,872, 3–19–74, Cl. D8—94.

Dean, Carl J.: *See*—
Wright, David M., and Dean. 230,855.

Dorman, Peter A. Litter retriever. 230,868, 3–19–74, Cl. D30—99.

Douglas, Livingston C. Dispensing closure for an aerosol package or the like. 230,830, 3–19–74, Cl. D9—258.

Edwards, Frank M., to American Hospital Supply Corp. Medical liquid nebulizer container for inhalation therapy. 230,896, 3–19–74, Cl. D83—1.

Edwards, Frank M., to American Hospital Supply Corp. Blower tube for ultrasonic nebulizer. 230,897, 3–19–74, Cl. D83—12.

Edwards, Thomas G. Display board for photographs or the like. 230,808, 3–19–74, Cl. D6—234.

Eliot Noyes & Associates: *See*—
Noyes, Eliot, and Bevilacqua. 230,789.

Elliot, David C. Automatic animal feeder or similar article. 230,867, 3–19–74, Cl. D30—15.

Equasound Corp.: *See*—
Petroff, Michael L. 230,865.

Etablissements Allibert: *See*—
Firdmann, Jacques. 230,794.

Everts, Julie Ann. Net fabric scouring pad. 230,814, 3–19–74, Cl. D7—178.

Fink, David H., to Windsor Industries Inc. Portable radio. 230,887, 3–19–74, Cl. D56—4.

Fink, Morris, to Windsor Industries, Inc. Radio. 230,888, 3–19–74, Cl. D56—4.

Firdmann, Jacques, to Etablissements Allibert. Hand grip for installation above bath tubs. 230,794, 3–19–74, Cl. D6—86.
Fogel, Joel D. Automatic drink dispenser. 230,902, 3–19–74, Cl. D94—3.
Foote, Daniel J., to Master Lock Co. Clamp for a looped cable end. 230,825, 3–19–74, Cl. D8—110.
Formica Corp.: *See*—
Chisholm, James E. 230,851.
Lax, Michael. 230,853.
Fortune, William S. Air blowing-vacuuming implement or the like. 230,820, 3–19–74, Cl. D8—51.
Fortune, William S. Desoldering implement or the like. 230,816, 3–19–74, Cl. D8—30.
Friederich, Paul C., and E. J. Cramazou. Wall block. 230,846, 3–19–74, Cl. D18—2.
Corning Glass Works: *See*—
Bruce, Robert A. 230,812.
Gluck, Daniel, to Columbia Broadcasting System, Inc. Retractable knife. 230,823, 3–19–74, Cl. D8—99.
Goffe, William L. Letter opener. 230,824, 3–19–74, Cl. D8—102.
Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Gas lighter. 230,879, 3–19–74, Cl. D48—27.
Greene, Alfred F. Combined comb and bottle opener. 230,898, 3–19–74, Cl. D86—8.
Hacker, Harold R. Vibratory feeder. 230,885, 3–19–74, Cl. D55—1.
Hamilton Cosco, Inc.: *See*—
Lo Turco, Raymond A. 230,784.
Harris, Ewell J. Fish lure. 230,848, 3–19–74, Cl. D22—29.
Hawkins, Eugene W., and D. E. Johnson. Combined light table and work bench or the like. 230,785, 3–19–74, Cl. D6—4.
Hickman Designs Ltd.: *See*—
Hickman, Ronald P. 230,801.
Hickman, Ronald P., to Hickman Designs Ltd. Workbench. 230,801, 3–19–74, Cl. D6—179.
Hinkel, Norman E.: *See*—
Schmitz, Louis W., and Hinkel. 230,840.
Hobart Brothers Co.: *See*—
Howell, Donald L., and Wildenthaler. 230,817.
Howell, Donald L., and Wildenthaler. 230,818.
Hoehn, Harold J.: *See*—
Mansur, Fred E., and Hoehn. 230,856.
Hoffmann, Carter C., and T. W. Luoma, to Carter-Hoffmann Corp. Combined mobile bar and storage unit. 230,798, 3–19–74, Cl. D6—144.
Howard, John R., to Minnesota Mining and Mfg. Co. Set of bath treads. 230,805, 3–19–74, Cl. D6—209.
Howell, Donald L., and L. E. Wildenthaler, to Hobart Brothers Co. Welding gun. 230,817, 3–19–74, Cl. D8—30.
Howell, Donald L., and L. E. Wildenthaler, to Hobart Brothers Co. Welding gun nozzle. 230,818, 3–19–74, Cl. D8—30.
Hudson, H. D., Mfg. Co.: *See*—
Pinke, August H. 230,850.
Hughes, George H., to National Distillers Co. Textile fabric. 230,900, 3–19–74, Cl. D92—1.
Hughes, George H., to National Distillers Co. Textile fabric. 230,901, 3–19–74, Cl. D92—1.
74, Cl. D6—70.
Interlake, Inc.: *See*—
Meyer, Edward P. 230,793.
International Business Machines Corp.: *See*—
Keillor, R. David, and Traglia. 230,860.
Shelkofsky, Clifford I., and Wiener. 230,861.
Jeruchim, Simon, to Helena Rubinstein, Inc. Bottle. 230,828, 3–19–74, Cl. D9—168.
Johnson, Darrell M. Plaque. 230,866, 3–19–74, Cl. D29—23.
Johnson, Douglas E.: *See*—
Hawkins, Eugene W., and Johnson. 230,785.
Johnson, Morris E., and J. Princ, to Nichols Homeshield Inc. Plant support. 230,884, 3–19–74, Cl. D54—2.
Jones, Francis J. Toothpick dispenser. 230,881, 3–19–74, Cl. D52—2.
Kabushiki Kaisha Ricoh: *See*—
Muramatsu, Masaki. 230,891.
Okajima, Masaki. 230,890.
Kardel Products Corp.: *See*—
Reedy, Delbert R. 230,892.
Kapreilian, Harry C. Pedal action unit for pianos. 230,889, 3–19–74, Cl. D56—9.
Keillor, R. David, and, P. J. Traglia, to International Business Machines Corp. Document reader or the like. 230,860, 3–19–74, Cl. D26—5.
Keim, John K. Game board. 230,870, 3–19–74, Cl. D34—5.
Kindel, Stephen. Light switch. 230,862, 3–19–74, Cl. D26—13.
Koyen, Edward A., to Ohaus Scale Corp. Volumetric dispenser. 230,880, 3–19–74, Cl. D52—2.
Kurita Water Industries Ltd.: *See*—
Takebayasi, Hisatomo. 230,849.
Kurosu, Teisuke, to Matsushita Electric Industrial Co., Ltd. Electronic calculator. 230,859, 3–19–74, Cl. D26—5.
Lampel, George J., to Citizen America Corp. Desk calculator. 230,857, 3–19–74, Cl. D26—5.
Lane, Herbert D. Combined can tap and bottle opener. 230,819, 3–19–74, Cl. D8—40.
Lang, Jean W. Belt. 230,783, 3–19–74, Cl. D2—385.
Laskowski, Wolfgang F. Instrument holders. 230,822, 3–19–74, Cl. D8—72.
Lax, Michael, to Formica Corp. Sliding door unit for shower stalls or the like. 230,853, 3–19–74, Cl. D23—69.
Lehneis, Hans R., to New York University. Wrist driven arm support. 230,895, 3–19–74, Cl. D83—1.
Lehneis, Hans R., to New York University. Arm and wrist support. 230,894, 3–19–74, Cl. D83—1.
Lemley, Robert W. Front-end stand for vehicles. 230,837, 3–19–74, Cl. D12—55.
Lemley, Robert W. Stand for mobile homes. 230,839, 3–19–74, Cl. D12—55.
Lemley, Robert W. Vehicle stand. 230,838, 3–19–74, Cl. D12—55.
Lemley, Robert W. Ramp for vehicles. 230,835, 3–19–74, Cl. D12—53.
Liljewski, Josephine C. Crescent pillow. 230,804, 3–19–74, Cl. D6—201.
Loewy, Raymond. Kitchen cabinet. 230,799, 3–19–74, Cl. D6—150.
Lorenz, Leo J., and W. E. Bean, to Massey-Ferguson Inc. Grille for a tractor. 230,876, 3–19–74, Cl. D40—5.
Lo Turco, Raymond A., to Hamilton Cosco, Inc. Invertible booster chair for a child. 230,784, 3–19–74, Cl. D6—3.
Luebke, Karl, to Luebke KG. Chair. 230,790, 3–19–74, Cl. D6—65.
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Mansei Kogyo Kabushiki Kaisha: *See*—
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Mansur, Fred E., C. W. Salbury, and J. C. Baker, to Owens-Illinois, Inc. Light emitting gas discharge matrix display panel. 230,854, 3–19–74, Cl. D26—5.
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Howard, John R. 230,805.
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Morita, Masaharu. Newspaper holding and bundling device. 230,802, 3–19–74, Cl. D6—184.
Motion Industries, Inc.: *See*—
Priestley, Richard T. 230,845.
Muramatsu, Masaki, to Kabushiki Kaisha Ricoh. Microfilm cartridge. 230,891, 3–19–74, Cl. D61—1.
Muramatsu, Masaki, to Kabushiki Kaisha Ricoh. Microfilm cartridge. 230,891, 3–19–74, Cl. D61—1.
Musgrave, Donald A., and J. M. Bell, to UMC Industries, Inc. Refrigerated upright display case. 230,803, 3–19–74, Cl. D6—187.
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Okajima, Masaki, to Kabushiki Kaisha Ricoh. Film spool. 230,890, 3–19–74, Cl. D61—1.
Ono, Koumei. Wrench. 230,815, 3–19–74, Cl. D8—22.
Owens-Illinois, Inc.: *See*—
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Penson, John B., to Minnesota Mining and Mfg. Co. Set of bath treads. 230,807, 3–19–74, Cl. D6—209.
Penson, John B., to Minnesota Mining and Mfg. Co. Set of bath treads. 230,806, 3–19–74, Cl. D6—209.
Peterson, Audrey J. Combined mobile stand and tray unit for a hair stylist. 230,800, 3–19–74, Cl. D6—166.
Petroff, Michael L., to Equasound Corp. Enclosure for high fidelity loudspeaker system. 230,865, 3–19–74, Cl. D26—14.
Pinke, August H., to H. D. Hudson, Mfg. Co. Three-way turret nozzle. 230,850, 3–19–74, Cl. D23—34.
Polsson, Guy, to Torotel, Inc. Radio receiver. 230,886, 3–19–74, Cl. D56—4.
Powers, Ralph G., to Royal Industries, Inc. Jack stand. 230,836, 3–19–74, Cl. D12—55.
Priestley, Richard T., to Motion Industries, Inc. Runabout vehicle body. 230,845, 3–19–74, Cl. D14—3.
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Rayn, James J., Jr. Service tray. 230,810, 3–19–74, Cl. D7—27.
Reedy, Delbert R., to Kardel Products Corp. Unit for converting a refrigerator to a combined refrigerator and freezer. 230,892, 3–19–74, Cl. D67—3.

Roper, Ralph E., to Wallace Expanding Machines, Inc. Packaging tray. 230,829, 3–19–74, Cl. D9—219.
Rosselli, Alberto, to Proposals S.R.L. Armchair. 230,791, 3–19–74, Cl. D6—67.
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Schmitz, Louis W., and N. E. Hinkel. Recreational water vehicle. 230,840, 3–19–74, Cl. D12—62.
Scholl, Kenneth S. Dish for fruit cocktail. 230,809, 3–19–74, Cl. D7—20.
Seaquist Valve Co.: *See*—
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Sonnergaard, Arne N. C., to AB Automatic. Collapsible cleaning cart. 230,834, 3–19–74, Cl. D12—30.
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Strang, Robert E. Holder for a telephone receiver. 230,863, 3–19–74, Cl. D26—14.
Sykes, Charles A. Camper cab. 230,844, 3–19–74, Cl. D14—3.
Takebayasi, Hisatomo, to Kurita Water Industries Ltd. Faucet filter. 230,849, 3–19–74, Cl. D23—4.
Tegner, Raymond U. H., to Amerock Corp. Towel bar. 230,796, 3–19–74, Cl. D6—99.
Thimens, Ted L. Building. 230,843, 3–19–74, D13—1.
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Visscher, Dennis, to Beatrice Food Co. Cart. 230,833, 3–19–74, Cl. D12—29.
Wagner, Arthur C., to Ace-In-The-Hole. Device for winding or coiling expansion anchors from sheet metal blanks. 230,821, 3–19–74, Cl. D8—59.
Wallace Expanding Machines, Inc.: *See*—
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Wallach, Mark. Clock or similar article. 230,878, 3–19–74, Cl. D42—7.
Wiener, Edward R.: *See*—
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Windsor Industries Inc.: *See*—
Fink, David H. 230,887.
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Wells, Kenneth L. Utility cart for house cleaning solvents and applicators. 230,832, 3–19–74, Cl. D12—29.
Wildenthaler, Leo E.: *See*—
Howell, Donald L., and Wildenthaler. 230,818.
Howell, Donald L., and Wildenthaler. 230,817.
Wilkinson, Alvis D. Flower pot. 230,875, 3–19–74, Cl. D35—3.
Winsett, Marion H. Ice cube vending machine. 230,882, 3–19–74, Cl. D52—3.
Winter, Lloyd C. Golf club head. 230,869, 3–19–74, Cl. D34—5.
Worthington, John M. Golf bag. 230,871, 3–19–74, Cl. D34—5.
Wright, David M., and C. J. Dean. Tray for data processing cards. 230,855, 3–19–74, Cl. D26—5.

CLASSIFICATION OF PATENTS

ISSUED MARCH 19, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 136
6LN 3,798,067
3,798,068
26 3,798,069
3,798,070
134R 3,798,071
178 3,798,073

CLASS 137
68 3,797,510
71 3,797,511
116.5 3,797,512
132 3,797,513
212 3,797,514
218 3,797,515
340 3,797,516
344 3,797,517
434 3,797,518
512 3,797,519
517 3,797,520
525.7 3,797,521
528 3,797,522
599.1 3,797,523
606 3,797,524
625.6 3,797,525
630.14 3,797,526
832 3,797,527

CLASS 138
46 3,797,528
111 3,797,529
137 3,797,530
147 3,797,531

CLASS 139
194 3,797,532

CLASS 141
1 3,797,533
3 3,797,534
46 3,797,535
134 3,797,536
142 3,797,537
313 3,797,538

CLASS 144
3D 3,797,539
3,797,540
3,797,541
4 3,797,542
145 3,797,543
235 3,797,544

CLASS 145
33A 3,797,545
61L 3,797,546

CLASS 148
6.16 3,798,074
12 3,798,075
3,798,076
13 3,798,077
26 3,798,078
33.5 3,798,079
187 3,798,080
188 3,798,081
3,798,082
3,798,083
189 3,798,084

CLASS 149
10 3,798,085
19.1 3,798,086
19.2 3,798,087
19.4 3,798,090
20 3,798,088
22 3,798,089
60 3,798,091
89 3,798,092

CLASS 151
7 3,797,547
41.75 3,797,548

CLASS 152
175 3,797,549

CLASS 156
62.2 3,798,093
69 3,798,094
73 3,798,095
151 3,798,096
152 3,798,097
154 3,798,098
158 3,798,099
167 3,798,100
212 3,798,101
214 3,798,102
244 3,798,103
306 3,798,104
307 3,798,105
384 3,798,106
500 3,798,107
510 3,798,108
568 3,798,109
582 3,798,110

CLASS 159
2E 3,797,550
3 3,797,551
17C 3,797,552

CLASS 160
267 3,797,553
354 3,797,554

CLASS 161
89 3,798,111
162 3,798,112
164 3,798,113
191 3,798,114
227 3,798,115
231 3,798,116
245 3,798,118
251 3,798,117

CLASS 162
65 3,798,119
112 3,798,120
205 3,798,121
315 3,798,122

CLASS 164
89 3,797,555
95 3,797,556
282 3,797,557

CLASS 165
1 3,797,558
3,797,559
26 3,797,560
37 3,797,561
39 3,797,562
48 3,797,563
82 3,797,564
111 3,797,565
114 3,797,566
120 3,797,567
131 3,797,568
169 3,797,569

CLASS 166
77 3,797,570
88 3,797,571
127 3,797,572
224S 3,797,573
274 3,797,574
282 3,797,575
299 3,797,576

CLASS 172
22 3,797,577
3,797,578
42 3,797,579
311 3,797,580
372 3,797,581
451 3,797,582

CLASS 173
4 3,797,583
105 3,797,584
131 3,797,585
133 3,797,586
152 3,797,587

CLASS 174
14R 3,798,345
15C 3,798,346
84C 3,798,347
84S 3,798,348
92 3,798,349
102R 3,798,350
140C 3,798,351

CLASS 175
18 3,797,588
94 3,797,589
213 3,797,590
296 3,797,591
325 3,797,592

CLASS 176
67 3,798,123
76 3,798,124
78 3,798,125

CLASS 177
134 3,797,593
136 3,797,594
164 3,797,595
210 3,797,596

CLASS 178
5.4AC 3,798,356
5.4CD 3,798,355
3,798,357
3,798,361
5.4HE 3,798,352
5.4E 3,798,354
5.4 3,798,353
5.6 3,798,358
5.8R 3,798,362
6 3,798,363
6.6DC 3,798,364
6.6A 3,798,365
6.8 3,798,366
7.2 3,798,367
3,798,368
7.5R 3,798,369
18 3,798,370
22 3,798,359
3,798,360
67 3,798,371

CLASS 179
1GQ 3,798,373
1SA 3,798,372
1F 3,798,374
2R 3,798,375
15BS 3,798,378
15BT 3,798,376
3,798,377
16E 3,798,379
18DA 3,798,381
18B 3,798,380
81R 3,798,382
84R 3,798,383
3,798,384
100.2MD 3,798,387
100.2S 3,798,385
100.4M 3,798,386
100.4R 3,798,388
101 3,798,389
107FD 3,798,390
114R 3,798,391
115.5ES 3,798,392
182R 3,798,393

CLASS 180
1F 3,797,597
6.48 3,797,598
53R 3,797,599
64M 3,797,600
78 3,797,601
79.1 3,797,602
82 3,797,603
89R 3,797,604
90 3,797,605

CLASS 181
27A 3,797,606

CLASS 182
82 3,797,607
112 3,797,608

CLASS 184
7R 3,797,609

CLASS 186
306 3,797,610

CLASS 188
71.8 3,797,611
79 3,797,612
79.5GE 3,797,613
134 3,797,614
285 3,797,615
298 3,797,616

CLASS 191
49 3,797,617

CLASS 192
12BA 3,797,618
13R 3,797,619
56R 3,797,620
56 3,797,621
111A 3,797,622
146 3,797,623

CLASS 193
25R 3,797,624
34 3,797,625

CLASS 194
2 3,797,626
41 3,797,627
99 3,797,628

CLASS 195
5 3,798,126
65 3,798,127
68 3,798,128
80R 3,798,129
3,798,130
103.5R 3,798,131

CLASS 197
1R 3,797,629
98 3,797,630
133R 3,797,631

CLASS 198
19 3,797,632
39 3,797,633
43 3,797,634
75 3,797,635
210 3,797,636
221 3,797,637
236 3,797,638
252 3,797,639
271 3,797,640
280 3,797,641

CLASS 200
5A 3,798,394
17R 3,798,395
30A 3,798,396
34 3,798,397
44 3,798,398
61.45R 3,798,399
83R 3,798,400
84C 3,798,401
161 3,798,402

CLASS 203
53 3,798,132
99 3,798,133

CLASS 204
6 3,798,134
15 3,798,135
3,798,136
35N 3,798,137
52R 3,798,138
56R 3,798,139
67 3,798,140
129.43 3,798,141
147 3,798,142
181 3,798,143
186 3,798,144
192 3,798,145
3,798,146
195M 3,798,147
213 3,798,148
225 3,798,149
272 3,798,150
281 3,798,151
299 3,798,152

CLASS 206
.5 3,797,642
.82 3,797,649
1R 3,797,643
41R 3,797,644
46H 3,797,645
47A 3,797,646
51 3,797,647
83.5 3,797,650
107 3,797,651
229 3,797,652
277 3,797,648
320 3,797,653
326 3,797,654
330 3,797,655
335 3,797,656
356 3,797,657
484 3,797,658

CLASS 208
48AA 3,798,153
65 3,798,154
139 3,798,155
216 3,798,156
251 3,798,157

CLASS 209
85 3,797,659
499 3,797,660

CLASS 210
33 3,798,158
3,798,159
53 3,798,160
73 3,797,661
78 3,797,662
3,797,663
83 3,797,664
236 3,797,665
265 3,797,666
304 3,797,667
522 3,797,668

CLASS 211
44 3,797,669
94 3,797,670
176 3,797,671

CLASS 212
8 3,797,672

CLASS 213
3,797,673
57 3,797,674

CLASS 214
1D 3,797,675
1R 3,797,676
8.5D 3,797,677
16.4B 3,797,678
75H 3,797,679
83.3 3,797,680
85.5 3,797,681
152 3,797,682
301 3,797,683
313 3,797,684
334 3,797,685
338 3,797,686
620 3,797,687

CLASS 215
9 3,797,688
253 3,797,689

CLASS 219
10.53 3,798,403
10.55 3,798,404
56 3,798,405
92 3,798,406
3,798,407
121P 3,798,408
130 3,798,409
3,798,410
136 3,798,411
145 3,798,412
210 3,798,413
216 3,798,414
441 3,798,415
505 3,798,416
532 3,798,417
535 3,798,418
541 3,798,419

CLASS 220
1R 3,797,690
1.5 3,797,691
24R 3,797,692
44A 3,797,693
44R 3,797,694
85R 3,797,695
90.4 3,797,696

CLASS 221
13 3,797,697
20 3,797,698
85 3,797,699
145 3,797,700
155 3,797,701

CLASS 222
1 3,797,702
26 3,797,703
41 3,797,704
153 3,797,705
187 3,797,706
193 3,797,707
3,797,708
194 3,797,709
219 3,797,710
3,797,711
566 3,797,712

CLASS 223
37 3,797,713
46 3,797,714

CLASS 224
2B 3,797,715
4D 3,797,716
5H 3,797,717
25A 3,797,718

CLASS 225
100 3,797,719

CLASS 226
33 3,797,720

CLASS 227
9 3,797,721
67 3,797,722
109 3,797,723

CLASS 228
37 3,797,724
41 3,797,725

CLASS 229
17R 3,797,726
23A 3,797,727
36 3,797,728
40 3,797,729
43 3,797,730
52B 3,797,731
53 3,797,732
55 3,797,733
62.5 3,797,734

CLASS 232
16 3,797,735

CLASS 233
20R 3,797,736
27 3,797,737

CLASS 234
77 Re.27,941

CLASS 235
61.11E 3,798,421
61.11R 3,798,422
61.12R 3,798,423
61.5S 3,798,420
150.1 3,798,424
150.27 3,798,425
151.1 3,798,426
151.11 3,798,427
3,798,430
151.12 3,798,431
151.34 3,798,432
155 3,798,433
159 3,798,434
168 3,798,428
183 3,798,429

CLASS 239

1	3,797,738
3	3,797,739
11	3,797,740
	3,797,741
57	3,797,742
148	3,797,743
172	3,797,744
227	3,797,745
288.5	3,797,746
311	3,797,747
321	3,797,748
	3,797,749
336	3,797,750
426	3,797,751
443	3,797,752
533	3,797,753
542	3,797,754
547	3,797,755
585	3,797,756

CLASS 240

2MA	3,798,435
3	3,798,436
10R	3,798,438
10.6R	3,798,437
10.65	3,798,439
10.66	3,798,440
41.35R	3,798,441
51.11R	3,798,442
103R	3,798,443
106R	3,798,444
106.1	3,798,445
146	3,798,446

CLASS 241

1	3,797,757
29	3,797,758
30	3,797,759
	3,797,760
34	3,797,761
36	3,797,762
82.1	3,797,763
100.5	3,797,764
236	3,797,765
282.2	3,797,766

CLASS 242

43	3,797,767
43.1	3,797,768
55.53	3,797,769
56R	3,797,770
56.1	3,797,771
72.1	3,797,772
75.43	3,797,773
84.2G	3,797,774
155M	3,797,775
188	3,797,776
197	3,797,777
199	3,797,778
	3,797,779
200	3,797,780

CLASS 244

1SC	3,797,781
3.16	3,797,782
7A	3,797,783
46	3,797,784
53R	3,797,785
103S	3,797,786
114B	3,797,787
153R	3,797,788

CLASS 248

214	3,797,789
221	3,797,790
228	3,797,791
229	3,797,792
295	3,797,793
	3,797,794
316R	3,797,795
346.1	3,797,796
362	3,797,797
399	3,797,798
491	3,797,799

CLASS 249

13	3,797,800
197	3,797,801

CLASS 250

49.5P	3,798,447
71.5R	3,797,802
	3,798,448
201	3,798,449
209	3,798,450
211R	3,798,451
213VT	3,798,453
213R	3,798,452
231	3,798,454
256	3,798,455
308	3,798,456
532	3,798,457
569	3,798,458
576	3,798,459

CLASS 251

61.5	3,797,803
68	3,797,804
214	3,797,805

CLASS 252

1	3,798,161
32.5	3,798,162
33.4	3,798,163
47.5	3,798,164
51.5A	3,798,166
51.5R	3,798,165
62.1	3,798,167
89	3,798,168
	3,798,169
162	3,798,170
182	3,798,171
188	3,798,172
301.4F	3,798,173
317	3,798,174
429B	3,798,175
437	3,798,176
455R	3,798,177
468	3,798,178
527	3,798,180
535	3,798,179
539	3,798,181
546	3,798,182
557	3,798,183

CLASS 254

192	3,797,806

CLASS 259

41	3,797,807
191	3,797,808

CLASS 260

2.5BB	3,798,184
2.5HB	3,798,187
2.5A	3,798,186
2.5M	3,798,185
2.5P	3,798,189
2.5R	3,798,188
5	3,798,190
13	3,798,191
29.2M	3,798,192
29.4UA	3,798,193
29.6E	3,798,194
30.4R	3,798,195
41.5A	3,798,196
42.14	3,798,197
45.85R	3,798,198
49	3,798,199
77.5AM	3,798,200
78TF	3,798,201
88.2R	3,798,202
93.1	3,798,291
112.5	3,798,203
	3,798,204
	3,798,205
	3,798,206
	3,798,207
119	3,798,208
211.5R	3,798,209
	3,798,210
211.7	3,798,211
239.3D	3,798,212
239.55C	3,798,215
239.55D	3,798,216
	3,798,217
239.55R	3,798,213
	3,798,214
246R	3,798,218
250A	3,798,219
251R	3,798,220
258	3,798,221
268TR	3,798,223
268C	3,798,222
281	3,798,224
286R	3,798,225
287R	3,798,226
289R	3,798,227
290HL	3,798,228
302SD	3,798,229
307A	3,798,230
307D	3,798,231
309.5	3,798,233
309.6	3,798,232
310A	3,798,234
326.13R	3,798,235
327TH	3,798,236
332.5	3,798,237
340.9	3,798,241
345.2	3,798,240
346.4	3,798,238
348A	3,798,242
369	3,798,243
	3,798,244
380	3,798,239
398	3,798,245
403	3,798,246
404.5	3,798,247
429.7	3,798,248
429.9	3,798,249
438.5R	3,798,250
448.2B	3,798,251
	3,798,253
448.2E	3,798,252
453R	3,798,254
465F	3,798,255
465.8R	3,798,256
475P	3,798,257
479R	3,798,258
483	3,798,259
497A	3,798,260
504R	3,798,261
505R	3,798,262
516	3,798,263
526N	3,798,264
534M	3,798,265
535P	3,798,266
541	3,798,267
552R	3,798,268
553R	3,798,269
566R	3,798,270
575	3,798,271
586H	3,798,272
593R	3,798,273
609F	3,798,274
609R	3,798,275
612R	3,798,276
621C	3,798,277
638R	3,798,278
667	3,798,279
668F	3,798,280
670	3,798,281
674A	3,798,282
683.15D	3,798,284
	3,798,285
683.3	3,798,283
848	3,798,286
878B	3,798,288
878R	3,798,287
895	3,798,289
929	3,798,290
950	3,798,292
964	3,798,293

CLASS 261

91	3,797,809
111	3,797,810
114	3,797,811

CLASS 264

41	3,798,294
99	3,798,295
171	3,798,296
181	3,798,297
210F	3,798,298
249	3,798,299
250	3,798,300
294	3,798,301
310	3,798,302

CLASS 266

16	3,797,812
23M	3,797,813
34L	3,797,814
36P	3,797,815

CLASS 267

65R	3,797,816
71	3,797,817
122	3,797,818

CLASS 269

322	3,797,819

CLASS 270

69	3,797,820
79	3,797,821

CLASS 271

12	3,797,822
64	3,797,823

CLASS 272

57J	3,797,824
74	3,797,825

CLASS 273

1R	3,797,826
35R	3,797,827
126R	3,797,828
128R	3,797,057
130B	3,797,829
131A	3,797,830
138R	3,797,831
161	3,797,832
178R	3,797,833

CLASS 274

10R	3,797,834

CLASS 277

171	3,797,835
200	3,797,836

CLASS 279

114	3,797,837

CLASS 280

11.13K	3,797,838
11.35C	3,797,839
	3,797,844
11.35T	3,797,840
	3,797,843
11.35	3,797,841
11.37B	3,797,845
24	3,797,846
33.99H	3,797,861
36B	3,797,848
36C	3,797,847
36R	3,797,842
47.37	3,797,849
106T	3,797,850
124A	3,797,852
124R	3,797,851
150AB	3,797,853
	3,797,854
	3,797,855
	3,797,856
150B	3,797,857
	3,797,858
179R	3,797,859
	3,797,860
422	3,797,862
476R	3,797,863

CLASS 285

140	3,797,864
175	3,797,865
208	3,797,866

CLASS 291

3	3,797,867

CLASS 292

57	3,797,868
128	3,797,870
207	3,797,869
209	3,797,871

CLASS 293

30	3,797,872
63	3,797,873
86	3,797,874

CLASS 294

1R	3,797,875
63B	3,797,876
67B	3,797,877
71	3,797,878

CLASS 296

1S	3,797,879
24R	Re.27,942
26	3,797,880
28A	3,797,881
28C	3,797,882
35R	3,797,883

CLASS 297

159	3,797,884
445	3,797,885
452	3,797,886
454	3,797,887

CLASS 299

76	3,797,888

CLASS 302

2R	3,797,889
3	3,797,890
52	3,797,891

CLASS 303

21BE	3,797,893
21EB	3,797,892
21R	3,797,894

CLASS 305

27	3,797,895

CLASS 307

10LS	3,798,460
106	3,798,461
116	3,798,462
125	3,798,463
141	3,798,464
	3,798,465
205	3,798,466
235	3,798,467
242	3,798,468
247R	3,798,469
252R	3,798,470
255	3,798,471
291	3,798,472

CLASS 308

1A	3,797,896
6C	3,797,897
187	3,797,898
187.1	3,797,899
236	3,797,900
	3,797,901

CLASS 310

8	3,798,473
9.6	3,798,474
15	3,798,475

CLASS 312

39	3,797,902
116	3,797,903
214	3,797,904
262	3,797,905
330	3,797,906

CLASS 313

3	3,798,476
68R	3,798,477
70R	3,798,478
109	3,798,479
109.5	3,798,480
110	3,798,481
188	3,798,482
	3,798,483
198	3,798,484
205	3,798,485
220	3,798,486
229	3,798,487
231	3,798,488
	3,798,489
311	3,798,490
315	3,798,491
346R	3,798,492

CLASS 315

8	3,798,493
11	3,798,494
	3,798,495
13C	3,798,496
29	3,798,497
36	3,798,498
39	3,798,499
82	3,798,500
169TV	3,798,501
	3,798,502

CLASS 317

2B	3,798,503
13R	3,798,504
68	3,798,505
100	3,798,506
101DH	3,798,507
234R	3,798,508
	3,798,509
	3,798,510
	3,798,511
235R	3,798,512
	3,798,513
	3,798,514
246	3,798,515
258	3,798,516

CLASS 318

3	3,798,517
6	3,798,518
46	3,798,519
55	3,798,520
128	3,798,521
174	3,798,522
212	3,798,523
571	3,798,524
588	3,798,525
696	3,798,526

CLASS 320

6	3,798,527
46	3,798,528

CLASS 321

6	3,798,529
11	3,798,530
18	3,798,531

CLASS 324

.5R	3,798,532
10	3,798,533
	3,798,534
	3,798,535
33	3,798,536
34	3,798,537
40	3,798,538
	3,798,539
51	3,798,540
72.5	3,798,541
133	3,798,542
140D	3,798,543

CLASS 325

38A	3,798,544
55	3,798,545
166	3,798,546
305	3,798,547
309	3,798,548
322	3,798,549
346	3,798,550
370	3,798,551
420	3,798,552
453	3,798,553

CLASS 328

43	3,798,554
74	3,798,555
133	3,798,556
	3,798,557
163	3,798,558
167	3,798,559
	3,798,560

CLASS 329

104	3,798,561

CLASS 330

28	3,798,562
44	3,798,563

CLASS 331

1A	3,798,564
94	3,798,565
94.5L	3,798,566
94.5T	3,798,571
94.5	3,798,567
	3,798,568
	3,798,569
	3,798,570
108D	3,798,572

CLASS 332

16R	3,798,573

CLASS 333

10	3,798,574
	3,798,575
18	3,798,576
30R	3,798,577
83T	3,798,578

CLASS 334

52	3,798,579

CLASS 335

37	3,798,580
291	3,798,581

CLASS 337

92	3,798,582
202	3,798,583

CLASS 339

14L	3,798,585
14R	3,798,584
89R	3,798,586
97P	3,798,587
127	3,798,588
223S	3,798,589

CLASS 340

3R	3,798,590
41A	3,798,592
52F	3,798,596
52H	3,798,593
	3,798,594
59	3,798,595
146.1AL	3,798,597
147R	3,798,598
	3,798,599
148	3,798,600
	3,798,601
149A	3,798,602
	3,798,603
150	3,798,604
172.5	3,798,591
	3,798,605
	3,798,606
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	3,798,614
	3,798,615
173LM	3,798,618
173LT	3,798,620
173R	3,798,616
	3,798,617
	3,798,621
173.2	3,798,619
174MA	3,798,623
174TF	3,798,622
213R	3,798,624
237S	3,798,625
267R	3,798,626
274	3,798,627
276	3,798,628
279	3,798,629
	3,798,630
	3,798,631
324A	3,798,633
324M	3,798,632
347AD	3,798,636
	3,798,637
347DD	3,798,635
347P	3,798,634
365S	3,798,639
366B	3,798,638
378R	3,798,640

CLASS 343

6.5SS	3,798,641
7ED	3,798,642
8	3,798,643
	3,798,644
102	3,798,645
109	3,798,646
112D	3,798,647
113DE	3,798,648
117R	3,798,649
225	3,798,650
702	3,798,651
708	3,798,652
	3,798,653
745	3,798,654
754	3,798,655

CLASS 346

1	3,798,656
74E	3,798,657
131	3,798,658
136	3,798,659

CLASS 350

3.5	3,797,907
7	3,797,908
46	3,797,909
96WG	3,797,911
96B	3,797,910
99	3,797,912
150	3,797,913
160LC	3,797,914
211	3,797,915
214	3,797,916
250	3,797,917
269	3,797,918
270	3,797,919
303	3,797,920

CLASS 351

7	3,797,921
169	3,797,922

CLASS 352

123	3,797,923
194	3,797,924

CLASS 353

27	3,797,925

CLASS 354

25	3,798,660
44	3,798,661
51	3,798,662
	3,798,663
	3,798,664
79	3,798,665
	3,798,666
83	3,798,667
149	3,798,668
174	3,798,669
195	3,798,670
226	3,798,671

CLASS 355

3	3,797,926
	3,797,927
	3,797,928
	3,797,929
4	3,797,930
13	3,797,931
18	3,797,932
35	3,797,933
52	3,797,934
53	3,797,935

CLASS 356

71	3,797,936
102	3,797,937
109	3,797,938
111	3,797,939
134	3,797,940
175	3,797,941
181	3,797,942
200	3,797,943
237	3,797,944

CLASS 360

12	3,798,672
66	3,798,673

CLASS 401

33	3,797,945
116	3,797,946

CLASS 403

23	3,797,947
245	3,797,948
355	3,797,949
370	3,797,950

CLASS 404

19	3,797,951
52	3,797,952
98	3,797,958
103	3,797,953
117	3,797,954

CLASS 408

20	3,797,955
35	3,797,956
44	3,797,957
135	3,797,959
240	3,797,960

CLASS 415

126	3,797,961
169	3,797,962
175	3,797,963

CLASS 416

134	3,797,964
186	3,797,965

CLASS 417

13	3,797,966
34	3,797,967
138	3,797,968
273	3,797,969
360	3,797,970

CLASS 418

84	3,797,971
85	3,797,972
118	3,797,973
129	3,797,974
137	3,797,975
142	3,797,976
267	3,797,977

CLASS 423

5	3,798,303
36	3,798,304
49	3,798,305
50	3,798,306
143	3,798,307
243	3,798,309
244	3,798,310
263	3,798,326
329	3,798,311
386	3,798,312
472	3,798,313
498	3,798,314
574	3,798,308
	3,798,315
	3,798,316

CLASS 424

47	3,798,317
84	3,798,318
91	3,798,319
92	3,798,320
128	3,798,321
200	3,798,322
212	3,798,323
250	3,798,324
	3,798,325
274	3,798,327
314	3,798,328
330	3,798,329
342	3,798,330

CLASS 425

8	3,797,978
47	3,797,979
84	3,797,980
110	3,797,981
198	3,797,982
242B	3,797,983
243	3,797,984
305B	3,797,985
352	3,797,986
463	3,797,987

CLASS 426

16	3,798,331
29	3,798,332
58	3,798,334
106	3,798,333
130	3,798,335
279	3,798,336
	3,798,337
307	3,798,338
357	3,798,339
361	3,798,340
432	3,798,341
471	3,798,342
502	3,798,343

CLASS 431

12	3,797,988
90	3,797,989
202	3,797,991
285	3,797,992
291	3,797,990

CLASS 432

212	3,797,993

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D06—	3	230,784
	4	230,785
	26	230,786
	47	230,787
	56	230,788
	59	230,789
	65	230,790
	67	230,791
	68	230,792
	70	230,793
	86	230,794
	97	230,795
	99	230,796
	134	230,797
	144	230,798
	150	230,799
	166	230,800
	179	230,801
	184	230,802
	187	230,803
	201	230,804
	209	230,805
		230,806
		230,807
	234	230,808
D07—	20	230,809
	27	230,810
	85	230,811
	121	230,812
		230,813
	178	230,814
D08—	22	230,815
	30	230,816
		230,817
		230,818
	40	230,819
	51	230,820
	59	230,821
	72	230,822
	94	230,872
	99	230,823
	102	230,824
	110	230,825
	230	230,826
	257	230,827
D09—	168	230,828
	219	230,829
	258	230,830
		230,831
D12—	29	230,832
		230,833
	30	230,834
	53	230,835
	55	230,836
		230,837
		230,838
		230,839
	62	230,840
	98	230,841
D13—	1M	230,842
	R	230,843
D14—	3F	230,844
	R	230,845
D18—	2	230,846
D22—	13	230,847
	29	230,848
D23—	4	230,849
	34	230,850
	55	230,851
	57	230,852
	69	230,853
D26—	5C	230,854
		230,855
		230,856
		230,857
		230,858
		230,859
		230,860
		230,861
	13R	230,862
	14A	230,863
	B	230,864
	G	230,865
D29—	23A	230,866
D30—	15	230,867
	99	230,868
D34—	5GB	230,871
	GH	230,869
		230,873
	SS	230,870
	15M	230,874
D35—	3A	230,875
D40—	S	230,876
D42—	7R	230,878
D48—	2	230,877
	27R	230,879
D52—	2B	230,881
	R	230,880
	3	230,882
	6B	230,883
D54—	1T	230,884
D55—	D	230,885
D56—	4B	230,886
		230,887
		230,888
	9	230,889
D61—	1T	230,890
		230,891
D67—	3R	230,892
D71—	1G	230,893
D83—	E	230,894
		230,895
	N	230,896
	12R	230,897
D86—	8	230,898
D87—	1R	230,899
D92—	B	230,900
	J	230,901
D94—	3B	230,902

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3,797,116	3,797,359	3,797,849	3,798,616	3,798,659	3,797,053
3,797,196	3,797,366	3,797,859	3,798,638	10 : 3,797,074	3,797,070
3,797,521	3,797,371	3,797,863	3,798,640	3,797,499	3,797,075
3,797,782	3,797,429	3,797,864	3,798,643	3,797,649	3,797,088
3,798,087	3,797,433	3,797,877	3,798,644	3,797,860	3,797,095
3,798,570	3,797,434	3,797,904	8 : 3,797,129	3,798,095	3,797,097
3,798,625	3,797,450	3,797,914	3,797,336	3,798,250	3,797,108
2 : 3,797,228	3,797,477	3,797,919	3,797,392	3,798,256	3,797,112
3,797,242	3,797,479	3,797,925	3,797,517	3,798,286	3,797,124
3,797,257	3,797,485	3,797,938	3,797,744	3,798,295	3,797,125
3 : 3,797,102	3,797,486	3,797,944	3,797,801	3,798,516	3,797,140
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3,797,147	3,797,494	3,797,964	3,798,158	11 : 3,798,653	3,797,175
3,797,153	3,797,506	3,797,999	3,798,446	12 : 3,797,040	3,797,186
3,797,542	3,797,508	3,798,042	3,798,593	3,797,042	3,797,200
3,797,602	3,797,510	3,798,055	3,798,613	3,797,048	3,797,216
3,797,956	3,797,518	3,798,073	3,798,614	3,797,123	3,797,245
3,797,959	3,797,536	3,798,097	9 : 3,797,050	3,797,144	3,797,274
3,798,548	3,797,538	3,798,131	3,797,076	3,797,160	3,797,286
3,798,592	3,797,552	3,798,132	3,797,154	3,797,179	3,797,294
3,798,631	3,797,554	3,798,133	3,797,239	3,797,182	3,797,296
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3,797,738	3,797,578	3,798,177	3,797,347	3,797,315	3,797,343
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3,797,057	3,797,590	3,798,191	3,797,421	3,797,350	3,797,355
3,797,099	3,797,593	3,798,199	3,797,441	3,797,442	3,797,361
3,797,100	3,797,624	3,798,209	3,797,459	3,797,458	3,797,378
3,797,107	3,797,627	3,798,274	3,797,496	3,797,523	3,797,404
3,797,110	3,797,634	3,798,312	3,797,641	3,797,644	3,797,408
3,797,113	3,797,635	3,798,316	3,797,718	3,797,740	3,797,435
3,797,119	3,797,639	3,798,323	3,797,837	3,797,762	3,797,463
3,797,134	3,797,646	3,798,349	3,797,868	3,797,796	3,797,470
3,797,136	3,797,651	3,798,365	3,797,874	3,797,975	3,797,471
3,797,139	3,797,667	3,798,366	3,797,890	3,798,296	3,797,524
3,797,143	3,797,675	3,798,371	3,797,896	3,798,317	3,797,525
3,797,150	3,797,684	3,798,375	3,797,931	3,798,396	3,797,526
3,797,158	3,797,693	3,798,377	3,797,960	3,798,540	3,797,531
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3,797,247	3,797,741	3,798,437	3,798,149	3,797,405	3,797,563
3,797,253	3,797,754	3,798,441	3,798,183	3,797,460	3,797,580
3,797,255	3,797,761	3,798,453	3,798,193	3,797,645	3,797,595
3,797,259	3,797,769	3,798,461	3,798,306	3,797,658	3,797,598
3,797,263	3,797,781	3,798,511	3,798,331	3,797,691	3,797,599
3,797,291	3,797,785	3,798,552	3,798,373	3,797,702	3,797,606
3,797,293	3,797,788	3,798,584	3,798,533	3,798,044	3,797,609
3,797,295	3,797,794	3,798,585	3,798,534	3,798,104	3,797,615
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DESIGN PATENTS

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PLANT PATENTS

6 : 3,522
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9 : 3,530

12 : 3,523

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U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
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